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Anthony T. Sheehan

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Trident and the Alternatives:
The Future of the United Kingdom's Independent Nuclear Deterrent

By

Anthony T. Sheehan

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INTRODUCTION

The United Kingdom has been involved with nuclear weapons since before 1940 and has been a nuclear power since the detonation of its first atomic bomb in 1952. It currently maintains an Independent Nuclear Deterrent (IND) of four submarines each equipped with sixteen Polaris A-3 ballistic missiles. This fleet will no longer be serviceable by the mid-1990's, and plans are well underway to replace the Polaris boats with a new fleet of four Trident missile submarines. While there always has been and continues to be a public and to some extent a political consensus behind Britain retaining an IND, the high cost and extra capabilities of the Trident system have led to much controversy over its potential as a replacement for Polaris. This paper will examine various aspects of the Trident decision.

Chapter One reviews the history of the IND from its earliest days up to the Trident decision. The next chapter looks at the pros and cons of the IND itself and concludes that it is worth keeping if it can be afforded. Chapters Three and Four present the criteria for an effective IND and examine how several potential candidate systems measure-up to those criteria. While many of the systems are attractive, the Trident II appears to be the best choice to replace Polaris even though Trident is a more capable missile than Britain needs. Finally, Chapter Five concludes that the IND will not harm current or planned arms control negotiations. It ends with an examination of the public and political consensus behind the IND. While public support for the IND remains strong, its existence is threatened by the unilateral disarmament policies of Labour.

CHAPTER ONE

FROM 1939 TO TRIDENT: A HISTORICAL BACKGROUND

In 1940, two German refugee scientists at Birmingham University, Rudolf Peierls and Otto Frisch, proved that a nuclear explosion was theoretically possible (1). This discovery revitalized British interest in atomic weapons (2). Further study of the scientists' work resulted in the 1941 Maud Report which agreed with their conclusions. Despite the fact that the United States had yet to enter World War II, the Maud Report was shared with the U.S., and in 1943 Prime Minister Winston Churchill and President Roosevelt agreed at Quebec to combine their bomb building efforts. Several British scientists led by Dr. William Penney traveled to the U.S. to participate in the secret Manhattan Project which led to the first atomic bomb. In 1944, Churchill and Roosevelt decided at Hyde Park, New York, to extend nuclear cooperation beyond the War (3). That promise of cooperation was to be short lived. In 1946 Congress passed the Atomic Energy Act (the McMahon Act) forbidding U.S. nuclear collaboration with any other nation (4).

In secret, new Labour Prime Minister Clement Attlee formed the Atomic Cabinet Committee in 1946. Chancellor of the Exchequer Hugh Dalton and President of the Board of Trade Sir Stafford Cripps objected to the cost of building a British bomb (5). They were subsequently excluded from GEN 163 (6), the Cabinet committee that decided on January 8, 1947 to proceed with a bomb building project. This decision was announced to Parliament over a year later on May 12, 1948. There was little controversy at that time (7).

Three factors explain the British decision to build an atomic bomb:

national pride, uncertainty over the future, and cost. The consensus on these three points lasted until the early 1980's.

Britain was one of the world's great powers before World War II. During the war, British power and influence declined relative to that of the U.S. and the Soviet Union, but the new balance of power was not immediately evident after the war. The U.K. still had commitments around the world and was a member with the U.S. and the Soviet Union in the "Big Three" victorious nations. The British economy was the strongest in Western Europe, and the extent of Soviet power was not yet known (8). U.K. scientists had been among the pioneers in nuclear research, and they expected it to continue after the war (9). Labour Foreign Secretary Ernest Bevin felt that Britain "could not afford to acquiesce in an American monopoly of this new development." (10). For a nation that viewed itself as still a major player in world events, there was nothing unusual about the decision to build an atomic bomb. In fact, it just seemed like the natural thing to do (11). A more vivid illustration of the national pride element of the nuclear decision was Bevin's declaration in the 1946 Atomic Cabinet Committee, "We've got to have this thing over here whatever it costs. We've got to have a bloody Union Jack on top of it." (12).

Another dimension of national pride involved a British desire to contribute to and to influence the Western defensive effort. During the war, there was close consultation between the U.S. and Britain. This cooperation ended soon after with U.S. moves like the McMahon Act. Many in Britain felt that nuclear weapons were necessary to restore U.S. respect for the U.K. and, with that respect, the former, close

relationship (13).

Right after the war, it was assumed that the U.S. would not have enough atomic weapons to cover all of the desired targets in the Soviet Union. A British nuclear force was thought necessary to ensure that all high priority areas were targeted. By the 1950's, however, the earlier, theorized difficulties of building a sizeable nuclear arsenal proved false. The U.S. had a sufficient supply of bombs. The British emphasis was then shifted to cover targets to which the U.S. would assign a low priority but which were important to Britain. Medium range Soviet nuclear systems would be on this list. In any case, the British still saw their weapons as valuable contribution to Western defense (14).

Uncertainty over the future was the second reason for the British bomb. First, the eventual number of nuclear powers was not yet known. It seemed sensible for the British to join the nuclear club early, especially when it retained commitments to defend a large part of the Commonwealth (15). Second, it was also unknown what role the U.S. would play in the post-war world. Many in the British Government felt betrayed by the McMahon Act and its ending of nuclear exchanges. The U.S. also halted lend-lease and other wartime cooperative policies. These steps pointed to a possible U.S. return to isolationism and served as a warning that the U.K. could not totally rely on the United States. The British were alone from the end of the war until the U.S. again intervened with NATO and the Marshall Plan, and they did not feel secure. Prime Minister Attlee believed nuclear weapons to be necessary to defend the U.K. under these circumstances. An independent British force was seen as an insurance policy against a U.S. retreat from Europe (16). Even today,

many of the justifications for retention of the IND rest on uncertainty over American intentions.

Finally, British defense efforts were and continue to be limited by available economic resources. Britain has been fortunate in that it has been able to maintain its IND at a relatively low cost. The expense of the initial bomb project was manageable, especially since a sophisticated delivery system was not then needed (17). Even so, Prime Minister Attlee hid the L100 million cost (18) of the project from Parliament in the Civil Contingencies Fund under the heading "Public Buildings in Great Britain" (19). Other Prime Ministers would not have this luxury, and monetary considerations soon became very important in deciding which nuclear systems to keep and which ones to cancel.

Dr. William Penney was picked to lead the initial development project which culminated on October 3, 1952 with the successful test of the first British bomb in the Monte Bello Islands off Australia (20). A few weeks later, the U.S. tested a hydrogen bomb (21). The Soviet Union did the same in August, 1953 (22). A new Conservative Government under Churchill decided in 1954 to produce a British hydrogen bomb. It was successfully tested on Christmas Island in the Pacific in 1957, four years after the Soviet device. Even at this relatively early period of the nuclear age it was becoming increasingly difficult for the British to keep up with the superpowers (23).

Fortunately, the U.S. was becoming more open to information sharing. The 1954 U.S. Atomic Energy Act allowed exchange of data on such external characteristics as the size, weight, shape, yield, and effects of nuclear weapons. Information on the design and fabrication of nuclear components

was still secret (24). The Atomic Energy Act was amended in 1958 to allow exchanges of design and production details and of fissile material, if not completed bombs. These exchanges were limited to nations that had made "substantial progress in the development of atomic weapons." The U.K. was the only ally that met this criterion. By May, 1959, Britain was even allowed to purchase nuclear weapons components and to exchange plutonium for enriched uranium (25). The British viewed these agreements as a way to cut the costs and increase the speed of their nuclear programs (26).

The United States had its own reasons for increasing cooperation. First, Soviet military strength was growing. The U.S. was becoming increasingly dependent on the help of its allies to meet this threat. For example, the U.S. needed basing sites in Britain for intermediate range missiles. America also wished to equip NATO forces with tactical nuclear weapons. Such moves required greater information sharing by the U.S. along with a willingness to address the desires of its allies in exchange for their support of U.S. programs. Second, President Eisenhower was more sympathetic to British concerns than Truman had been. He believed that faith and trust were vital to healthy alliance ties. Third, the British program was highly successful. U.K. scientists knew enough about nuclear weapons that there was little point in keeping secrets. In some areas, the British were even ahead of the Americans. Finally, the Soviet nuclear program was also highly developed. Leaks to the Soviets would not be as damaging as they would have been in the past when the U.S. had a stronger lead (27).

Atomic bombs suitable for military operations were ready by 1956.

Responsibility for delivering these weapons fell to the Royal Air Force Bomber Command's fleet of V-bombers, the Valiants, Vulcans, and Victors. These planes entered service in the mid-1950's, replaced the Bomber Command's older planes by 1960, and remained the delivery vehicle for Britain's Independent Nuclear Deterrent (IND) until the late 1960's (28). It was during this same period, however, that Minister of Defence Duncan Sandys issued the 1957 Defence White Paper which contained the beginning of the end for the Bomber Command. Sandys believed that manned bombers would soon be obsolete. All plans for a manned replacement for the V-bombers were ended (29) in favor of a liquid fueled, intermediate range, ballistic missile known as Blue Streak. Blue Streak was in development for three years until it was cancelled in 1960. Its reaction time of ten minutes was judged too slow for survivability, and the cost of the needed improvements was considered too high (30).

The cancellation of Blue Streak was not thought to be a major problem since the Bomber Command had an air launched missile known as Blue Steel. It would remain effective against Soviet air defenses until the mid 1960's when the British planned to acquire Skybolt, an American air launched ballistic missile (31). Skybolt can be seen as the last step in the decline of total British nuclear independence. The V-bombers were all British. Blue Streak's guidance system and engine were based on an American design. Now all other British nuclear projects were cancelled in favor of Skybolt. In 1960, when the Skybolt purchase was arranged, the only thing that the British could offer in return was a base at Holy Loch for U.S. Polaris submarines (32).

The British loss of national nuclear independence was not made any

easier by the new Kennedy Administration in the United States. Defense Secretary Robert McNamara especially desired American control over all Western nuclear forces in order to prevent a U.S. ally from starting a war that the U.S. did not want. In fact, in June, 1962, McNamara described small, independent, nuclear forces as "dangerous, expensive, prone to obsolescence, and lacking in credibility as a deterrent." While this position was militarily sound from an American standpoint, it put the British in a difficult situation since the U.K. was becoming increasingly dependent on the U.S. for the weapons of the IND (33).

Further diplomatic harm was done when the U.S. decided, because of technical problems, to cancel Skybolt, the one weapon on which the British had based all of their plans for the next several years. Freedman uses the word "horrified" to describe the British reaction to this move (34). A little over a month after the end of Skybolt, starting on December 19, 1962, Conservative Prime Minister Harold Macmillan and President Kennedy met in Nassau where it was agreed that the British could purchase American Polaris submarine launched ballistic missiles (SLBMs) (35). While the agreement commits the British missiles to the defense of NATO, Macmillan inserted a clause allowing independent British use of the weapons "where Her Majesty's Government may decide that supreme national interests are at stake." (36). A more detailed purchase agreement was later negotiated in which the British would buy Polaris A-3 missiles at cost plus five percent for research and development and build their own warheads and submarines (37).

Despite warnings that it would end the IND, the Labour Party under Harold Wilson won a Parliamentary majority in 1964 for the first time

since 1951. The left wing of the party favored unilateral nuclear disarmament, but Wilson was able to quiet them by trimming an optional fifth Polaris submarine from the program (38). The reasons that Wilson's Government decided to keep the Polaris program can be seen in the three points that formed the consensus behind the 1946 project.

Despite the fact that France, Britain's traditional rival, now had its own nuclear weapons, the national pride element of the consensus declined considerably. Wilson was willing to cancel Polaris if it proved too expensive (39). The desire to contribute to Western security continued but merged with increasing uncertainty over the future. Horizontal proliferation was limited to France and the People's Republic of China. Neither of these nations posed a direct threat to Britain although there was some concern that China might use its nuclear weapons against India (40). Far more threatening to the U.K. itself was the vertica. proliferation of the superpowers. The Soviet Union was becoming increasingly able to threaten the U.S. putting the U.S. nuclear guarantee of Europe in doubt. Rather than seeing themselves as nuclear partners with the U.S., the British began to focus on their ability to provide Western Europe with some independent nuclear cover should the U.S. back out in a crisis (41). The U.K. may have had to buy their missiles from the U.S., but a British finger was still on the button.

Part of this move towards Europe comes from a British desire to join the European Economic Community. Britain's foreign policy had two incompatible goals: closer economic relations with Europe and strong military ties with the United States (42). For a time it was thought that the British nuclear force could provide the basis for a European

deterrent and hopefully make it easier for the U.K. to join the E.E.C. (43). Prime Minister Macmillan considered nuclear cooperation with France, but he decided that it would disrupt the more valuable Anglo-American relationship. In the end, the Nassau Agreement ended any chance of an early British admission to the E.E.C.. Britain's allies, especially General de Gaulle of France, were upset that Britain had concluded such a major agreement tying itself to the U.S. without even consulting them (44).

Polaris was able to fill the IND niche. It was reliable and advanced enough to remain in service for a long time. It was an excellent second strike weapon, too inaccurate to threaten Soviet nuclear forces but sufficiently powerful to deliver a devastating countervalue retaliation (45). It was also inexpensive enough to satisfy Wilson's Labour Government. At the peak of its procurement period, Polaris would consume only five percent of the defense budget. Once operational, that percentage would drop to less than two (46). By the end of the 1960's the four Polaris submarines, Resolution, Repulse, Renown, and Revenge, had replaced the V-bombers as the vehicle for the IND. Since June, 1969 there has always been at least one Polaris submarine on patrol, and Polaris will continue in service until the Trident SLBM system becomes operational in the middle of the next decade (47).

The Polaris A-3 missile has three warheads each with a 200 kiloton yield, but they are not independently targetable. Rather, they fall in a pattern around a target after being fired from a submarine up to 2,500 nautical miles away (48). The original missile was, however, perceived to be vulnerable to advances in Soviet anti-ballistic missile (ABM)

defenses. First, a submarine can only fire one missile at a time since the water rushing into the missile tube after a launch temporarily destabilizes the sub (49). Second, by the time the warheads separate from the missiles, the missiles are already vulnerable to Soviet defenses. Third, only one submarine is guaranteed to be on patrol at any time. It would not take a Star Wars system to stop sixteen missiles coming one at a time. The British situation was made even more difficult by the fact that the Soviets put the one ABM system that they were allowed under the ABM Treaty around Moscow. Moscow is the primary target for Polaris not only for its symbolic significance but also because it is the nerve center of the centralized Soviet state (50).

Almost from the beginning of the Polaris force, the British were worried that advances in ABM technology would render their IND useless. In order to prevent this, they had two options represented by two American programs. The Polaris missiles could be replaced with the multiple, independently targetable, reentry vehicle (MIRV) missile called Poseidon which would overwhelm Soviet defenses with many targets (51). Alternately, the reentry vehicles of the non-MIRVed Polaris could be changed to enable them to penetrate Soviet defenses more effectively. This corresponds to an American program known as Antelope I (52).

Poseidon was rejected for two main reasons both by the Wilson Government and again by a new Conservative Government under Edward Heath. First, there was little domestic support for acquiring expensive MIRVed missiles so soon after Polaris had entered service. Second, the U.K. was again trying to enter the E.E.C. under Wilson and was a new member under Heath. A large Poseidon purchase from the U.S. would have disrupted

Britain's relationship with the E.E.C. just as the Nassau Agreement had done earlier (53). Instead, an improved version of Antelope was put into further development under the code name Chevaline. At the time, Chevaline was thought to be a less expensive option which would not require a divisive public debate. In fact, the program was not officially acknowledged until 1980 (54). Chevaline had been secretly started by a Labour Government and just as quietly endorsed by the appropriate people in the subsequent Conservative Government (55). Political survivability was also a strong factor in the final decision.

While the calculations on political survival were correct, the ones on cost were not. In 1974, Chevaline was estimated to cost L200 million compared to L500 million for Poseidon (56). Unfortunately, the technical complexity of Chevaline had been underestimated. By 1977, development costs had increased to L800 million. Also, the public was slowly becoming aware that a Polaris improvement program was underway. Cancellation by the Labour Government of the time would have sent a signal that the Labour Party was prepared to end the IND. Rather than waste the money already spent and spark an unwanted debate over the future of the IND, the Government decided to continue with Chevaline. By 1980, Chevaline was ready to be put on the missiles of the Renown (57).

While the details are still secret, the system is known to use balloon decoys. The warheads are also in balloons so that they cannot be distinguished from the decoys (58). Other elements of Chevaline include "hardened" electronics to protect the missiles from the electromagnetic effects of nuclear explosions, and warheads that separate from their missile before it is within range of ABM defenses. Even though the

missiles can still only be launched one at a time, the warheads can maneuver in space so that all arrive at the target at the same time (59). The final cost of Chevaline was over L1,000 million in 1980, or L530 million in 1972 pounds (60). In the end, the expected improvements in Soviet ABM defenses did not materialize making the expense of Chevaline even more painful.

Another problem with the Polaris missile is that in time the solid propellant can pull away from its casing causing the missile to misfire. The American missiles were older than the British ones and were repaired sooner. By the time that the British decided to remotor their missiles in 1982, the American Polaris facilities had already been closed. The U.K. had to pay extra to reopen these facilities (61). The repair program cost the U.K. L300 million (62). With the new motors and the Chevaline reentry vehicles, Britain's Polaris system should remain effective until the middle of the 1990's. By then the submarines will be nearing the end of their life. They will be increasingly difficult and expensive to repair, and they will be too noisy to remain safe from more developed Soviet anti-submarine warfare (ASW) weapons and tactics (63). Because of the long lead time needed to produce a replacement for Polaris, a decision had to be made by the early 1980's.

The Labour Government of Prime Minister James Callaghan started to study the option of replacement in 1978. Callaghan set up a secret committee consisting of himself, Chancellor of the Exchequer Denis Healey, Foreign Secretary Dr. David Owen, and Defence Minister Fred Mulley. The committee asked a research group under Sir Ronald Mason of the Ministry of Defence to study the technical aspects of the various

replacement systems. A similar group headed by Sir Michael Duff of the Foreign Office was charged with examining the wider policy aspects of replacing Polaris. The eventual Duff-Mason Report recommended the retention of the IND if it did not become prohibitively expensive. The technical recommendations leaned towards a new SLBM system. Based on these conclusions, Callaghan began discussions with President Carter in 1979 (64). The Labour Government realized, however, that any debate over the future of the IND was bound to become heated, and they wanted to postpone it as long as possible. The 1979 Labour Party Manifesto was worded to leave open the option of a replacement system while remaining vague enough not to stir up emotions (65).

Callaghan's Government was able to avoid the debate about a Polaris replacement. The Conservatives under Margaret Thatcher won in 1979. Mrs. Thatcher set up her own Cabinet committee called MISC7. It was composed of herself, Lord Carrington, Sir Geoffrey Howe, William Whitelaw, and Francis Pym, the ministers in charge of foreign, exchequer, home, and defence affairs respectively (66). By July, 1980, a decision had been reached to purchase the U.S. Trident I (C-4) missile (67). In 1982, the program was upgraded with more advanced Trident II (D-5) missiles after President Reagan accelerated the U.S. D-5 program (68). A better propulsion system, the pressurized water reactor 2 (PWR2), and the latest sonar were also included in the upgrade (69).

Both the C-4 and the D-5 agreements are similar to the original Polaris sales agreement. The U.K. will buy the missiles complete with their MIRVs but will supply its own warheads and submarines. The British forces will be assigned to NATO "except where the United Kingdom

Government may decide that supreme national interests are at stake." (70). The U.K. was to pay a five percent surcharge on the C-4's, the same as with Polaris (71), while the research and development charge for D-5 was limited to $116 million fiscal year 1982 dollars. The D-5 agreement also includes provisions for U.K. firms to bid for subcontracts on the same terms as U.S. firms (72). The letters exchanged between Prime Minister Thatcher and Presidents Carter and Reagan and between their respective defense secretaries contain none of the earlier hostile attitudes of the U.S. towards the IND during the Kennedy years. In fact, President Reagan speaks of "the great importance which the United States Government attach to the maintenance by the United Kingdom of an (IND)..." (73).

The Trident decision generated considerable military and political controversy based to a large extent on the great cost and destructive capabilities of the D-5 missile. Many who wished to retain the IND in principle argued that cheaper, albeit less effective, systems were sufficient to satisfy Britain's needs. These issues will all be considered in later chapters. The remainder of this chapter will be devoted to the technical and financial details of the Trident II system along with information on the progress of the program.

The D-5 is a highly accurate missile capable of destroying Soviet missiles in hardened silos (74). It has a range of 4,000 nautical miles with a full load of fourteen MIRVed warheads. The range increases to 6,000 nautical miles when only eight warheads are carried (75). The British plan to build a four submarine force. Each boat will be able to go for seven years between refits allowing more than one (and up to

three) submarines to be operational for a good portion of the time (76). In comparison, Polaris boats need a refit every 3½ years (77). Each submarine will be fitted with sixteen missile tubes. While the actual number of missiles and warheads remains secret, the D-5 system will not have more warheads than earlier planned for the C-4 system which allowed a maximum of 128 per submarine (78). The most likely configuration is sixteen missiles per submarine, each topped with eight, one hundred kiloton warheads (79). While Britain will retain operational control over the missiles in its submarines, those missiles will be taken from a common pool at the U.S. base in King's Bay, Georgia. The U.K. has rights to a full complement of sixteen missiles for each boat, but it does not have rights to any specific missile or set thereof (80).

The original capital cost estimate for the C-4 purchase was L5,000 million. The switch to D-5 missiles added L390 million to this figure. These missiles require a larger submarine than the C-4's. However, the cost of the larger boats is hidden by combining it with the cost of other submarine improvements. The total for enlarging and improving the submarines comes to L500 million. It should be noted that these improvements will result in longer periods between refits which should lead to lower operating costs for this configuration (81). In then current prices, the March, 1982 estimate of Trident's capital cost was L7,520 million (82). A 1982 decision to use the U.S. King's Bay facility cut L770 million from the projected cost producing a February, 1983 estimate of L6,984 million. The most recent figure, January, 1988, is L9,043 million capital expenditure covering the period 1980-2000 (83). In constant 1987-1988 prices this represents a saving of L1,807 million

compared to the 1982 estimate. This saving comes from more accurate cost estimates, the moving of some work to Britain, and a more favorable exchange rate than existed in the middle of the decade.

Of the L9,043 million, 64% will be spent in the U.K., an improvement from the 56% of 1981 (84). So far, fifty-nine British firms have received 337 subcontracts valued at $85 million, only two percent of the amount that the U.K. will spend on Trident in the United States. However, the Thatcher Government believes that the follow-on orders will be better (85). Breaking the program down into its components, as of January, 1988, 33% of the cost goes for submarines, 12% for missiles, 12% for missile related equipment, 8% for the tactical weapons system, 7% for shore construction, and 29% for warheads and miscellaneous (86).

The first Trident submarine, HMS Vanguard is due to enter service in 1994. The second submarine, Victorious, will be ready soon thereafter (87) with the Vengeance and the Venerable coming later (88). According to the Ministry of Defence, the Trident program is progressing satisfactorily (89). What they do not say is that there have been problems with the manufacturing program for the Trident warhead. In 1978, the Pochin Report warned that radiation levels at the atomic weapons facility at Aldermaston were too high. In 1980, a decision was made to replace the old A45 warhead construction facility with a more modern, safer one, the A90, to be ready by 1986. The decision to acquire the D-5 missile mandated increased production facilities and pushed A90's completion date back to 1988. Skilled manpower shortages are for the most part responsible for a further two year delay (90).

There is some controversy as to the effect that this delay will have

on the Trident program. The Defence Committee believes that the A45 facility, with enough lead time, will be able to produce a sufficient number of warheads to meet the requirements for the Vanguard (91). Urban, however, assuming one hundred warheads per submarine based on estimates of one hundred anti-ballistic missiles around Moscow by the mid-1990's, expresses doubts that the Vanguard will be able to enter service with a full complement of warheads (92). There is no dispute that it will be difficult to meet the targets for the other three boats.

The historical outline presented should provide a useful backdrop as attention is now turned to a more detailed consideration of other aspects of the Trident program and the IND.

CHAPTER TWO

WHY THERE SHOULD BE AN IND

The most fundamental question about the IND is whether it should exist at all. Does it enhance or diminish British security? There are various arguments both for and against it, and the purpose of this chapter is to examine them subject to some limitations. First, while moral issues are extremely important in the debate over nuclear weapons in general, there is enough material on this subject to warrant a separate senior thesis. The following discussion is, out of necessity, restricted to the military and strategic aspects of the IND. Second, the arguments advanced are about the IND in general, not about any specific system. Trident and some of the more viable alternatives will be evaluated on their own merits later.

Geography is a very influential factor in the relationship between NATO and the Warsaw Treaty Organization (WTO) and among the nations of the two alliances. The WTO is unified geographically. There is no question that the Soviet Union will vigorously resist any move against a WTO ally because its own territory would soon be threatened. The U.S., however, is an ocean away from most of the rest of NATO and for the most part invulnerable to anything but a nuclear attack. Another element to consider is that the WTO has large quantitative advantages over NATO in many categories of conventional arms. This is to some extent offset by the higher quality of NATO weapons. However, there is still debate as to whether or not NATO could stop a Soviet conventional attack without having to use nuclear weapons (1). That is the dilemma. Would the U.S. be willing to go nuclear to defend Western Europe or would it retreat

across the Atlantic so as to avoid a Soviet reprisal against U.S. cities?

There are also financial and political elements to NATO. The U.S. pays sixty percent of NATO's costs and provides forty-two percent of its forces (2). The U.S. is faced with a large federal budget deficit and the largest national debt in the world. Western Europe has long since recovered from the devastation of World War II and has a combined gross "national" product similar to that of the United States. Economic competition between the two sides of the Atlantic is strong. Also, the European allies frequently do not agree with U.S. foreign policy goals. The ongoing dispute over the Libyan pharmaceutical/chemical weapons plant is an example. These factors could lead to cuts in the U.S. NATO commitment.

Such U.S. cuts do not present an automatic case for a British IND. As long as there are more than token numbers of American soldiers stationed in Europe, the U.S. commitment is reasonably secure. The U.S. is unlikely to leave a conflict after American soldiers have been killed. There are currently no financial or political strains in the alliance that are strong enough to cause the U.S. to withdraw its forces from NATO. However, nobody knows what will happen in the future. The most obvious case for the U.S. to renounce its military guarantees to Europe has already been mentioned. If a Soviet offensive could not be repelled by conventional means, the U.S. might decide that a nuclear strike is not worth the risk of a Soviet reprisal, that saving the U.S. from a nuclear attack is more important than saving Western Europe from Soviet domination. Without the British IND, no other NATO nation would be able to provide nuclear cover.

It is also possible, although highly unlikely, for a political or financial dispute to split NATO. Towle mentions the possibility of a European move towards neutralism supposedly to isolate Europe from superpower disputes outside of Europe (3). This point is weaker now than it was in 1983 since tensions between the superpowers have been considerably relaxed and many Third World conflicts have died down. The current trends, however, could always be reversed. Looking at the situation from the other side of the Atlantic, he points out that the U.S. could become frustrated with the expense of NATO combined with the lack of European support for many aspects of U.S. foreign policy (4). Breaking-up NATO for these reasons is not likely. NATO has proven its ability to withstand major changes in its own structure and in the world at large. There also remains enough commonality of interest between the U.S. and Western Europe to render it irrational for either side of the Atlantic to sever its NATO ties, but rationality cannot be assured. An unfriendly end to NATO that involved Britain would pose special problems for the U.K. since it is dependent on the U.S. for the weapons of its IND. If Anglo-American ties were disrupted, it is unlikely that the U.S. would continue its nuclear cooperation with Britain. The implications of such a situation will be discussed later in this chapter.

The fundamental issue is that there are doubts about the U.S. commitment to Europe. These doubts have been a justification for the IND from its very beginning. They remain today as a reason in themselves for retention of the IND and as a foundation for many of its other justifications.

There is concern in Europe over the loss of the U.S. nuclear cover.

The fact that President Reagan considered the elimination of nuclear weapons at the Reykjavik Summit proved disturbing to our allies. One diplomat called it an "absolute and utter disaster." (5). The British IND can be seen as an insurance policy against any withdrawal of the American nuclear guarantee (6). The French have been using this rationale for a long time to justify their independent deterrent (7). They are also willing to pay twenty-five percent of their defense budget to maintain total nuclear independence (8). They can therefore be more open with their doubts about American reliability than the British who rely on the U.S. for their nuclear equipment.

The "second decision making center" is the second argument that is based on uncertainty over the U.S. nuclear guarantee. It is probably the most important strategic reason for the British IND, and it provides the British with a means to diplomatically express their unease (9). While the essential logic preceded him, it was Denis Healey, Labour Minister of Defence in the Wilson Government of the 1960's, who was among the first to rely on this argument (10).

Minister of Defence Francis Pym provides an excellent summary of the "second decision making center" reasoning. The U.S. is the most powerful nation in NATO. It has committed itself to the defense of NATO "by whatever means are necessary, without exception," and it has backed that commitment by actually deploying U.S. troops in Europe. However, the U.S. would be risking the devastation of its homeland if it were to use its nuclear weapons in the defense of Europe. While the British Government supposedly has no doubts about the strength of the U.S. resolve to protect its NATO allies, the Soviets might.

The United Kingdom, however, would be put directly at risk by any hostile Soviet military moves in Europe. A nation whose "survival in freedom" was under attack would be likely to use whatever weapons it had to protect itself. While the British have nowhere near the nuclear capabilities of the superpowers, they have enough destructive capability to inflict a considerable amount of damage on the Soviet Union. Even if the U.S. decides not to use its nuclear weapons in the defense of Western Europe, the second, independent nuclear force of the British could still hold the Soviets at risk. Soviet military calculations are made considerably more complicated by this second threat. Hopefully, the added danger represented by the IND will help to deter an attack on NATO in the first place (11). The French are not in NATO's military structure and therefore cannot perform this role as well as the British (12).

The sanctuary argument is the third uncertainty based reason for a British IND. According to Freedman, there are two different versions of this theory. The first runs directly counter to the "second decision making center" rationale. Rather than use its missiles to defend Europe should the U.S. back down, Britain would follow the U.S. lead and rely on its position as an island nation and the destructive potential of the IND to isolate itself from the strife across the English Channel. Supposedly the Soviets would pick on weaker members of NATO before they would attack a nuclear armed Britain. The image presented by this version of the sanctuary argument is not nearly as noble as the one in the "second center" where Britain offers to use its missiles to protect an abandoned Western Europe. However, if Britain can preserve its freedom without putting itself at risk in a conflict on the Continent, it seems sensible

for Britain to do so.

The second version of the sanctuary argument takes into account the importance that the British Isles would have as a staging area for operations on the Continent. If the U.S. were to stay and fight in Europe, the U.K. would be an important forward base for U.S. forces. World War II operations like the Normandy invasion prove the validity of this point. While the Soviets may be willing to use nuclear weapons against concentrations of U.S. reinforcements in a nation that cannot respond in kind, they will be less willing to attack a nation with an IND. Britain's IND would provide defensive cover for U.S. forces at least until they crossed the English Channel. This argument is most effective in a situation where nuclear weapons have not yet been employed. The Soviet Union may not be willing to start such an exchange by attacking military targets in Britain. If nuclear exchanges have already begun, the value of the IND would be reduced (13).

The last uncertainty based reason for the IND is the trigger argument. It is more a way of keeping the U.S. tied to NATO than making up for a loss of U.S. nuclear capabilities. Because the British IND is based on the same missiles that the Americans use, the Soviets would not be able to distinguish between an American and a British attack, and the Soviets, if they fought back at all, would probably retaliate against the Americans. This would cause an American counterstrike (14). In another scenario, the U.S., realizing the Britain is launching one of its missiles, will launch a counterforce strike to reduce the ability of the Soviets to retaliate (15).

In either case the British IND is a trigger for the much larger U.S.

force. Windsor asserts that the Soviets will be deterred from an attack at least on Britain because they know that the IND could trigger the nuclear might of the United States. Essentially, Britain should keep an IND because it ties a superpower to the defense of the U.K. (16). These ties would not be as effective, however, if the U.S. had clearly backed away from a conflict. It also is not useable as an official justification. The U.S. would not be selling nuclear missiles to the U.K. if it thought that the U.K. planned to trap the U.S. in a nuclear war that it did not want.

Finally, British military strength has political dimensions. The U.K. spends more on its military in real, per capita, and percentage of gross domestic product terms than most other NATO nations (17). Of the L19,215 that will be spent on defense in 1988-1989, 95% will go, either directly or indirectly, towards Britain's NATO commitments (18). The British Army of the Rhine's three divisions are responsible for defending a sixty-five kilometer section of the intra-German border. The U.K. also has forces ready to rapidly reinforce NATO's flanks. The RAF maintains fifteen squadrons in Germany. The Royal Navy is the largest of all of the European NATO navies. At the outbreak of tensions, it would provide 70% of the ships in the East Atlantic and English Channel (19).

The IND gives Britain extra influence as the only European nuclear power in NATO. While this reason is not sufficient in itself to justify an IND, it can be added to other reasons to push a pro-IND decision over the top. The so called "special relationship" between the U.S. and the U.K. is further enhanced by the nuclear cooperation between the two nations. While the U.S. is clearly the dominant partner in this

relationship, the U.K. does have access to U.S. nuclear technolo/ strategic thinking beyond that of the other NATO allies.

The extent of Britain's conventional contribution to NATO a.. ..s status as the only European NATO nation with strategic nuclear weapons give the U.K. influence in Western Europe beyond what its relative economic position and geographical location would dictate. Some of Britain's allies see in the IND a channel for European influence on American nuclear policy and a way to balance the French force (20). The IND would give Britain an influential voice in the formation of any multinational, European nuclear force. In the 1960's, the presence of the IND was one factor that helped Britain defeat an American proposal for a Multilateral Force (21). Even Soviet analysts see Britain as a leader in Western European foreign policy (22) and as an influence on NATO nuclear strategy (23).

There is also an intangible element of prestige attached to the IND, a feeling that a nation armed with nuclear weapons commands more respect in the world. Whether or not this feeling has any basis in reality is debatable, but this justification has been used for the IND (24). It is true that the IND has allowed Britain a seat at the negotiations of several nuclear arms control treaties (25). The British, however, have been careful not to put their minimum deterrent at risk and have resisted its inclusion in the Intermediate Nuclear Forces talks and in bilateral superpower negotiations.

The final reason not to surrender the IND is that giving it up probably will not help the U.K. and may even hurt it. The Soviet Union has promised to destroy its missiles on a one for one basis with British

disarmament. Should the British decide to totally leave the nuclear club and also expel foreign bases, the Soviets would also assure the U.K. that it is no longer a target for nuclear weapons (26). The value of these promises is dubious. First, the Soviets would retain an overwhelming portion of their arsenal while removing a complicating factor to their military decisions. Second, there is no way to verify the promise not to target Britain. It could tragically prove false. A British renunciation of the IND will probably be an irrelevant contribution to current arms control negotiations. The U.K. unilaterally renounced chemical weapons in the late 1950's. The U.S. stopped production of these weapons in 1969 and has only recently resumed. Neither of these moves has had any impact on the rest of the world although there seems to have been some progress in recent talks (27).

Abandoning the IND could even be harmful to British interests. Britain's NATO allies see the IND as a balance to French forces and as a vehicle through which to make a European contribution to NATO nuclear decision making. It also helps to quell their own uncertainty about the U.S. nuclear guarantee (28). Surrendering the IND would be giving up a certain amount of influence in NATO. More importantly, it could lead to further U.S. frustration with its NATO allies and possibly even a decoupling of the U.S. from Europe. The unilateral surrender of the IND would be interpreted as another sign that the European branch of NATO was unwilling to provide for its own defense. Such a conclusion would be further reinforced if the U.K. took other steps, such as expelling U.S. nuclear bases from its territory, at the same time (29). The Labour Party has proposed unilateral British nuclear disarmament combined with

the removal of all U.S. nuclear weapons from British soil (30). The U.S. has been highly critical of these proposals and has warned of the damage that their implementation could do to NATO (31). The signals sent by cancelling the IND, especially in combination with other anti-nuclear moves, clearly could prove harmful to NATO unity and dangerous to Britain.

There is a strong case for keeping the IND, but it is not without some serious flaws. Critics of the IND attack it in two ways. They offer counter arguments to the various justifications for the IND, and they attempt to show that the IND is a dangerous and destabilizing force in its own right. The essential criticism is that there is no situation in which the IND can rationally be used. The Soviets, realizing this, will therefore not be deterred by the threat of its use (32). Britain is spending a considerable sum of money on a gun which the Soviets know is empty, not a wise investment by any means. Chalmers does an effective job of pointing out more specifically the weaknesses of the various justifications.

The first two pro-IND rationales see Britain providing nuclear cover for Western Europe either as the remaining nuclear power after a U.S. withdrawal or as a "second decision making center." Assuming that the Soviets decide to risk a nuclear reprisal and are able to successfully attack Western Europe without a U.S. nuclear response, it can be asked whether a relatively unharmed Britain would be any more willing than the U.S. to risk the devastating Soviet reprisal that would follow nuclear strike (33). The situation would be even more grave for Britain than for the U.S. since Britain is a smaller, more crowded country without the

nuclear arsenal necessary for a devastating counterforce first strike. The U.K. would probably be reluctant to commit national suicide, and, the Soviets, realizing this, would continue their attack.

The sanctuary arguments are next. Once again, the Soviets have invaded Western Europe and avoided a Western nuclear attack. Chalmers implicitly admits that the IND could spare the U.K. in the initial attack as the Soviets take on the non-nuclear Continental nations. Britain stands alone. The question is: could the IND keep it that way? Chalmers says no. If the Soviets lead off with a massive nuclear strike against the U.K., the IND will have failed its purpose of protecting Britain. At best, it could take a militarily useless revenge. If the Soviets launch a limited nuclear strike or even a purely conventional invasion, the IND is equally useless. In the face of a determined Soviet invasion, it would be best for the U.K. to engage in an "inch-by-inch defence of territory" and hope that popular resistance makes Soviet domination expensive and short lived. The alternative, use of the IND, risks the end of Britain itself (34).

In his attack on the second version of the sanctuary argument, Chalmers supposes that the U.S. had not backed out and that the conflict in Europe had already gone nuclear. Given this scenario, it is hard to believe that the nuclear exchanges could be limited to the Continent. They would probably escalate beyond all possible control. It is also hard to believe that the Soviets would not target U.S. nuclear facilities in Britain. Once again, use of the IND, even in response to Soviet strikes, would lead to another Soviet nuclear attack on Britain (35).

The last justification for the IND is the trigger argument. The

objections do not come from the strategic reasoning behind it. That is never directly challenged. Rather, the IND is criticized for its ability to start a much larger nuclear war. The trigger scenario is also not a particularly wise one to bring up around the United States. In any crisis, the U.S. would not want an ally with the power to trap U.S. nuclear weapons in a nuclear exchange that it does not want. Chalmers raises a strange sounding but strategically logical scenario in which the United States, facing a crisis in Europe, attacks Britain's nuclear weapons so that they cannot be used as a trigger (36). Chalmers neglects to mention that it is also true that if the U.S. clearly exempts itself from a conflict, the trigger argument loses much of its validity. Britain would be back at one of the above scenarios.

In addition to questioning the strategic value of the IND, its critics also state that it hinders arms control, encourages proliferation, and lowers the nuclear threshold. Arms control issues will be considered in the last chapter. For now it is sufficient to say that Britain remaining as a nuclear power probably will not hinder any current negotiations. The latter two issues are discussed below.

Britain is a relatively secure country with strong allies for neighbors. It has close ties to one of the two superpowers, and has not been invaded for hundreds of years. However, Britain still argues that it needs nuclear weapons to protect itself against the uncertainties of a dangerous world. If a country in such a favorable position needs nuclear weapons to defend itself, won't other nations in less safe positions desire nuclear capabilities to guarantee their much more uncertain futures? Many of the rationales behind a British force could be easily

adapted to the situations of Israel, South Korea, Iran, and a long list of other nations. Ending the IND may not prevent the near nuclear states from going nuclear anyway, but it would demonstrate that at least one of the nuclear states is serious about disarmament. The political pressure on the near nuclear states not to go nuclear would be increased (37).

The last reason to consider scraping the IND is that it takes money away from conventional defense thereby lowering the nuclear threshold. The Trident program, for example, will consume from 11.5 to twenty percent of the defense equipment budget in its peak years (38). This would buy from three hundred to fourteen hundred Challenger tanks. It could also buy thirty Type 23 frigates or ten squadrons of Tornado fighters (39). All of the equipment mentioned is the best currently available in the British arsenal. For those who believe that the IND is useless as a deterrent, the investment in conventional weapons is a much wiser move. Rather than going to a showy, expensive nuclear system, the money would be better spent on weapons which can stop a Soviet attack before the conflict has to go nuclear thereby making a real contribution to security.

Clearly, there are strong arguments both for and against retention of the IND. In reaching a conclusion, it must be remembered that the D in IND stands for deterrent, not defense. As Francis Pym states,

> The prime test of defence measures, above all in the nuclear field, is whether they help to make it less likely that aggressive war might be launched. How they might affect the course of such a war if it once started (sic) is essentially secondary. (40).

It is true that the IND would be useless as a war-fighting tool. Even with Trident, Britain could not endanger enough Soviet missile silos to

make the use of the IND anything but national suicide for Britain (41). In his discussion of the switch from Trident I to Trident II, Nott acknowledged that a successful first strike by the British would be impossible (42). While the superpowers may have enough accurate warheads to contemplate using their arsenals against each other's silos, Pym's statement remains true. Superpower deterrence is still based on the concept of mutual assured destruction.

If a war starts, it means that the IND has failed in its essential mission. The important thing for deterrence is that the IND is there and that it can be used with devastating effect. One Soviet analyst estimates that the Polaris system can destroy twenty percent of Soviet industrial resources and kill the same proportion of the Soviet population (43). Trident could boost that to half of the Soviet industrial base and twenty-four to sixty-eight million deaths (44). The Soviet Union does not consider these risks immaterial. Some Soviet analysts are impressed enough by the IND to conclude that the primary job of the Royal Navy is to launch nuclear strikes against vitally important enemy targets (45).

There probably is no scenario where a British use of the IND would help the U.K. militarily. However, when a Prime Minister is faced with a severe threat to the survival of the U.K. as a free and independent nation, it is hard to tell what s/he might do. S/he might, in desperation, turn to the IND even though its use would not be strategically sound. The Soviets have to take this unknown into consideration when contemplating an attack. The IND is capable of making the costs of a Soviet offensive higher than anything the Soviet Union

would gain by conquering Britain. Hopefully, the Soviets will conclude that moves against Britain would be too expensive to make them worthwhile.

The objection to the IND based on the fact that it might encourage nuclear proliferation is a harder one to counter. The argument that many of the justifications for the IND are not unique to the British situation, and may in fact be more relevant to the positions of other nations, is correct. Looking at history, however, weakens the proliferation criticism. First, Britain has been involved with nuclear weapons for a long time, and many of the justifications for the IND are decades old. This time span is sufficiently long that any proliferation because of the IND should be clear by now. Despite the long term presence of the IND and its rationales, the number of nuclear nations has remained remarkably stable. The nuclear club has only six confirmed members, and its real total is probably still under ten. It does not appear that the IND has had any effect on proliferation even though it theoretically could. Second, as with chemical weapons, unilateral British nuclear disarmament would probably prove irrelevant. Given the potential dangers of unilaterally renouncing the IND, the outside chance that it may retard proliferation is not worth the risk.

On the issue of conventional weapons, it should be noted that, while keeping the IND may lower the nuclear threshold, abandoning the IND could lower the conventional threshold by making Western Europe safer for conventional war. Since the early 1950's, British analysts have felt that investing in nuclear weapons provides more deterrent power for less money than trying to match the Soviets in conventional weapons (46). An

examination of the tank balance in Europe shows this to be correct. Looking at all of Europe from the Atlantic to the Urals reveals 15,400 NATO tanks compared to 51,000 WTO ones (47). Taking the most optimistic figure from above, 1,400 new tanks, would merely cut the WTO advantage from 3.3:1 to 3.0:1. On NATO's Central Front in West Germany, NATO has 8,100 tanks to defend against 17,000 WTO ones (48). Even here, adding 1,400 new tanks would still leave the WTO with a 1.8:1 advantage over NATO. If the Soviets were given a choice between Britain acquiring the tanks or Trident, they would almost assuredly pick the tanks.

In the end, the arguments for retaining the IND outweigh the arguments for renouncing it. A reasonable case can be made that it does make a contribution to deterrence even though it is hard to see a rational scenario for its use in a war. The objections based on proliferation and conventional weapons are not strong enough to outweigh the deterrence factor. Finally, it is impossible to know whether or not the U.S. nuclear guarantee of Europe is strong until there is a crisis, but then it would be too late to start rebuilding an abandoned IND. It is probably the wisest move for the U.K. to keep its IND if only as an insurance policy against a U.S. decision to abandon Europe to save itself from a Soviet strike.

The above scenarios are generally based on Britain using its IND in a time of crisis. Hidden in them is the assumption that any problem with the U.S. nuclear guarantee will manifest itself only after the crisis has started. By that time, the U.S. could not prevent the European nations from using whatever weapons they had available to defend themselves. That assumption is particularly relevant in the case of the IND. Britain

has relied on the U.S. for nuclear weapons ever since the cancellation of Blue Streak in 1960. The question of what would happen to the IND if the U.S. were to decide not to help the U.K. has not yet been discussed.

It must be remembered that cost has always been an element in the nuclear consensus. Blue Streak was cancelled in 1960 partly because upgrading it to the necessary level of performance was considered too expensive. In 1964, one of the main reasons that the Labour Government decided to keep Polaris was that it was "extraordinarily cheap." (49). Cost also was an element in the decision to go with Chevaline rather than Poseidon. Finally, much of the Trident debate centered on the expense of the new weapon. While there is a reasonably good case for the IND, even the best arguments cannot overcome what Chichester and Wilkinson describe as the "Reality of Penury" (50).

Without U.S. assistance to make the IND affordable, it is hard to believe that the British would maintain strategic nuclear weapons. If the U.S. were to cut off help in the middle of a weapon system's life, the U.K. has the technical ability to keep the missiles operational for a time. However, unless a deal could be made with France, and that possibility is questionable, even a Conservative Government would find it difficult to develop a replacement system. France has been able to maintain a totally independent force by devoting over twenty percent of its defense budget to it (51). In the U.K., many are concerned about the expense of Trident II. It will cost an average of three percent of the defense budget over its entire procurement period (52). It is unlikely that the British will change their historical reluctance to spend large sums of money on the IND, but, unless they do, they will remain dependent

on the U.S. for the weapons of the IND.

Up to now, the problems of dependency have not proven insurmountable. The British confidence that the U.S. will remain a reliable supplier is demonstrated in the decision in the early 1980's to keep an IND and to replace the aging Polaris system with the new Trident one. The Conservatives will control Parliament until 1991 or 1992, depending on when they choose to call the next general election. By that time, Trident will be too far down the road to be changed for another system. It can be asked, however, whether or not Trident was the best choice among the alternatives. That issue will now be considered.

CHAPTER THREE

CRITERIA FOR THE IND AND TRIDENT

If Britain is to keep an IND, its form still needs to be discussed. The Thatcher Government has opted for the Trident II D-5 missile, but is that the best choice given Britain's needs? This chapter will discuss the criteria for an effective IND, evaluate Trident II based on those criteria, and examine the political debate over the Trident decision. The next chapter will look at some of the alternative systems based on the same criteria used for Trident.

Even with Trident, the Thatcher Government claims that the IND will remain a minimum force of last resort (1). While some will dispute the assertion that Trident is a minimum force, it is true that Trident will represent a minor proportion of the superpower arsenals (2). To fulfill the role of a small, last resort deterrent, a candidate system must meet four essential requirements. These requirements are tough, but so is the job of the IND. The superpowers can afford to develop several different weapons and base them in several different ways so that the disadvantages of one system are compensated for by the advantages of another. The French do the same but at the cost of a portion of their defense budget that the British would not be willing to pay. Given the amount of money they wish to spend, the British are limited to one system. When all the eggs have to be put into one basket, that basket had better good.

First, a candidate for the IND must be able to survive any attempt to destroy it. This includes a "bolt from the blue" nuclear strike. If the Soviets think that they can wipe out the IND in a preemptive strike, the IND would attract rather than deter an attack. Second, the warheads

must be able to strike their intended targets. If the vehicles that carry them are unreliable or are vulnerable to defensive measures, then the deterrence value of the force would be greatly reduced. Third, the IND must be independent. Independence includes not only the availability of the weapons themselves but also of needed maintenance, spare parts, command and communications facilities, and intelligence data. If the IND is reliant upon another nation to the extent that the other nation can prevent its effective use, then many of the arguments for an IND are no longer valid. Its deterrence value will decline. Finally, the cost of the system must be reasonable in relation to the benefits expected from it. While nuclear weapons may have a more powerful deterrent effect than conventional weapons, the latter are still necessary for a sound, balanced military policy. There are two components to cost, capital and life-cycle. The former refers to what it will cost to initially acquire the system. The second covers operations and mid-life improvements. By the time it is retired in the middle of the 1990's, Polaris will have been in service for over twenty-five years. If the next system lasts as long, it will start around 1995 and end in 2020. This is a good time frame to measure life-cycle costs.

Trident easily meets the invulnerability criterion. Ballistic missile submarines are generally acknowledged to be most survivable leg of the strategic triad of ground launched missiles, bombers, and submarines. There is no evidence that the Soviet Union has ever been able to track a Polaris submarine (3). The 6,000 nautical mile range of the D-5 more than doubles the 2,500 nautical mile range of Polaris. In order to stay in range of Moscow, a Polaris submarine is restricted to

the Northeast Atlantic, an area where the Soviets can concentrate their anti-submarine warfare (ASW) efforts. The D-5 missile opens up all of the North and a good deal of the South Atlantic. Even the Indian Ocean is available for patrols if a second submarine is available while the first rounds the Cape of Good Hope. This is a hopelessly large area to patrol without tremendous and unlikely advances in ASW.

With a four boat force, the Government is only willing to guarantee one submarine on patrol at all times (4). In the unlikely event that this boat is found, the entire IND would be at risk. However, Trident submarines will be able to go twice as long as Polaris submarines between refits. This means that two to three submarines will usually be available for patrol should the Government choose to use them (5). If a crisis emerges, extra submarines can be put to sea thereby increasing IND's chances for survival. Trident is not discrete in the sense that the launching of a ballistic missile would reveal the position of the submarine (6). At least two boats would have to be on patrol for one to fire a warning shot.

The D-5 force should prove to be highly reliable. Ballistic missile technology has been around for a long time, and the U.K. has had considerable experience in producing warheads for and operating these weapons. This experien e may have been a factor in the decision to replace Polaris with a ballistic, rather than a cruise, missile (7). It is likely that eighty to ninety percent of a submarine's missiles will work properly when launched (8). Assuming sixteen missiles per submarine and eight warheads per missile, at least twelve missiles (9) should work sending ninety-six warheads to their targets. The actual number of

working missiles will probably be higher.

The next question is whether those warheads will actually reach their targets. The answer is right now is yes. Trident D-5 missiles are accurate enough to destroy Soviet missiles in their silos. That is far beyond what Britain needs. British targeting policy is so secret that even the captains of the Polaris boats do not know where their missiles are aimed (10). That the British threaten "key aspects of Soviet state power" (11) is all that is known to the public. This almost certainly means Moscow and probably also includes other Soviet population, military, and industrial centers. Trident missiles are more than accurate enough for this mission. As Cook points out, "it is a matter of indifference whether your warhead descends to the left or to the right of Red Square." (12). It is clear that the warheads will be able to find their targets, but will they be able to reach them?

Ballistic missile warheads are small and very fast, covering over four miles every second. This makes them very difficult, if not impossible, to stop (13). The Anti-Ballistic Missile Treaty limits both superpowers to two ABM sites of up to a hundred defensive missiles each. The Soviets have a small ABM system around Moscow (14). Even if the Soviets were to go to the maximum of a hundred ABMs around Moscow and each one were to do its job perfectly, a single Trident submarine could still launch enough warheads to get some through. If the Moscow criterion were dropped, the undefended new targets would be easily destroyed resulting in possibly more disruption than would concentrating Trident's power on Moscow alone.

In the future, advances in ABM technology could possibly provide an

effective defense against a small nuclear power like Britain. This is a problem with all small forces regardless of the system chosen, but Trident II does have a few useful features that could help to counter these developments. First, it is not limited to eight warheads per missile. Up to six more warheads or decoys can be added, at the sacrifice of some range, to further confuse defenses. Second, the D-5 missile will be in service with the U.S. Navy for most of the time that the British will be using it. This commonality enables the British to take advantage of any ABM penetration aids devised by the U.S. to keep its own fleet effective.

Independence is one area where the Trident system is weak. There are two dimensions to independence: supply/maintenance and operational. Trident is most vulnerable in the first area. The missiles will not only be supplied by the U.S., but they will also be stored and maintained by the U.S. at King's Bay. This saves money both initially and throughout the life of the system. It also leaves Britain vulnerable to a U.S. decision to stop supplying the missiles. Such a step is highly unlikely, but if the U.S. were cut Britain off, the IND would not necessarily be ended. The missiles have an in tube life of about seven years (15), probably enough time to make alternate arrangements. If such arrangements cannot be made, Britain is not lacking in the scientific and technical expertise to develop domestic facilities to service the missiles. Such a move, however, would be extremely expensive. A Government only nominally committed to the IND may not be willing to make so large an investment. There might also be a dangerous gap between when the last missiles are no longer operational and when Britain has the

facilities to replace or recondition them.

Assuming that the U.S. supplies the missiles as planned, the operational independence of Trident still needs to be assessed. Trident will be committed to the defense of NATO by agreement with the U.S. and will be targeted according to NATO's Scheduled Strike Plan (16). However, the U.K. will retain control over the use of Trident missiles and can act independently picking its own targets if necessary. In criticizing Trident's dependence on the U.S., Chalmers points out that both the submarines and the missiles will rely on U.S. Navstar satellites for pinpoint accuracy in navigation. This type of accuracy is necessary for hitting military targets, but even he acknowledges that it probably is not essential given the British targeting doctrine (17).

The estimated capital cost for the project is L9,043 million ove the period 1980-2000. This makes Trident II one of the most expensive options to initially acquire. When the operational costs of Trident II are added up, however, it is likely to be one of the most inexpensive systems to operate over its life cycle. Operational expenditures on Polaris consume less than two percent of the defense budget. The figure for Trident is likely to be even lower since the submarines can go twice as long between refits.

Trident also has the advantages of commonality with the United States. Using King's Bay will save construction and maintenance charges. More importantly, Britain will not suffer the penalties of uniqueness. Chevaline was a very expensive program made even more burdensome by the fact that the U.K. had to shoulder all of the costs. The remotoring of the Polaris missiles in the early 1980's cost the British more per

missile than the Americans since the U.K. had to pay extra to reopen the Polaris facilities. The D-5 will be in service with the U.S. for most of the time that Britain expects to use it. First, the British can benefit from U.S. research and development on Trident without paying the full cost of it. Second, all of the missiles come from a common pool at King's Bay. Britain will not have to worry about making special arrangements for repair. If a major defect emerges, all of the missiles would have to be fixed resulting in lower costs per unit than if the U.K. had to make special arrangements.

The Trident II system is generally acknowledged to be the most capable submarine based system available. With the exception of the supply/maintenance area of independence, it is more than adequate as a replacement for the Polaris minimum deterrent. Even that one weakness could be overcome, albeit at a high price. The debate over acquisition of this system, however, was heated. The left-wing Guardian was even moved to refer to Prime Minister Thatcher as the "Right Hon. ICBM for Finchley." (18).

It first must be noted that any debate over a Polaris replacement was bound to become heated. This debate presented a visible, public forum to discuss the IND in general. There have been opponents to the IND ever since its beginning, but Polaris has not offered any opportunities for criticisms that would attract the attention and emotions of the general public. In many ways, Polaris fills the minimum deterrent niche very well. It is too small and inaccurate to pose a destabilizing threat to Soviet nuclear forces, but it is powerful enough for a devastating retaliation. There has not yet been a crisis where it

has come even close to being used. It has proven reliable and advanced enough to remain effective and in service for over twenty-five years. Finally, its low operational costs are a small price to pay for the deterrence and prestige benefits already discussed in Chapter Two. It is unfortunate that there is no modern weapon system that can play the role of minimum deterrent as well as Polaris has done. All of the possible successor systems have flaws. If the chosen one could be defeated, then there was a chance for the IND to slowly die.

The decision to purchase Trident II posed additional problems which intensified the debate. While it can be argued that the proposed alternatives are inadequate for a minimum, last resort deterrent, the D-5 system has possibly quantitative and definitely qualitative capabilities beyond that role. It is also a very expensive system to acquire. This combination made it several enemies.

The Polaris A-3 missile has three warheads, but they are not independently targetable. This means that a submarine can only fire on sixteen targets. The D-5's will have eight warheads each, this is 2 2/3 as many warheads as Polaris but eight times its targeting capacity. If a Polaris submarine provides an adequate deterrent with sixteen targets, it can be asked why Trident requires 128, especially since the increased availability of Trident allows more than one boat to be on patrol for most of the time. In fact, that was the first question in the House of Commons after Defence Minister John Nott announced the decision to substitute D-5 missiles for the previously planned C-4's. Mr. John Silkin (Labour Member for Deptford) accused the Conservative Government of escalating the arms race and violating the spirit of the

Non-Proliferation Treaty (19). Article VI of the Non-Proliferation Treaty calls on its signatories to "pursue negotiations in good faith" to end the arms race and to promote disarmament (20). The eightfold increase in targeting capacity seemed inconsistent with that pledge.

The second problem with the D-5's was that their counterforce accuracy is not necessary given the official targeting policy. Some accused the Government of abandoning the previous deterrent strategy and seeking a first strike force (21). More reasonable critics still questioned the necessity of a hard target kill capability and condemned any move away from deterring a nuclear war to initiating one (22). Chalmers postulates a decapitation attack which would disrupt the Soviet command and communication centers for long enough for the U.S., if only to prevent a retaliation against U.S. targets, to wipe out the remaining Soviet nuclear forces (23). Even some Conservatives were concerned that Britain was buying a superpower weapon (24).

The Government has taken several steps to defuse these criticisms. On the question of escalation, it points out that the Soviets now have five times as many strategic warheads as they had in 1970. Trident, however, will have at most 2½ times as many warheads as Polaris (25). This means that, even if the strategic arsenals of the superpowers are cut by fifty percent, Trident II warheads will represent about the same proportion of Soviet totals as Polaris did when it entered full service in 1970 (26). This argument is an attempt to show that Trident will be no more threatening to the Soviets now than Polaris, a relatively uncontroversial weapon, was when it was introduced. This justification is less compelling than it seems on the surface when Trident's increased

range, accuracy, and eightfold increase in targeting capacity are considered (27).

Second, improvements in Soviet missile defenses over the next thirty years need to be taken into account. The extra warheads are presented as "long-term insurance" against improvements in Soviet ABM technology (28). When the C-4 was still under consideration, the possibility of "deMIRVing" it was studied. It was concluded that such a program would cost more money and provide less capability than simply buying the MIRVed reentry vehicles from the United States (29). In supporting the C-4 decision, the Defence Committee of the House of Commons accepted the extra capabilities of the earlier missile as simply a "by-product" of acquiring the only system that they considered adequate to Britain's needs (30).

The greater warhead capacity and enhanced accuracy of the D-5 presented additional justification problems. In response, Defence Minister Nott clearly stated that the decision to go to D-5 had nothing to do with its superiority to the C-4. He acknowledged that "Trident C-4 would be sufficient to (British) deterrent needs." (31). Rather, he desired to maintain commonality with the U.S. for the advantages described earlier. In order to defuse some possible criticism, the number of warheads for D-5 was limited to the number originally planned for C-4 (32). Nott specifically renounced any U.K. desire for a first strike stating that the U.K. force would be too small to successfully carry out such an attack (33).

Since even the Government admitted that it did not need the capabilities of Trident II, some critics who wished to keep the IND

questioned the wisdom of paying for it when cheaper alternatives were available. The comparatively low cost per "unit" of deterrence of nuclear weapons has always been an element in the consensus behind them. To many of those who wanted to keep the IND, the expense of Trident appeared to be a dangerous threat to cost element of the IND consensus. The decision to switch to the D-5 pushed spending plans back by several years. Cancellation charges would not be too high for the next Government to terminate a weapon which, at the time, only the Conservatives backed. There was concern that the D-5 would be killed and with it the whole IND. A cheaper system was said to be more politically survivable (34). Fortunately for Trident, the Conservatives won the following two elections, and most of the planned funds will have been spent or committed by the next general election. However, concerns over cost still need to be addressed.

As far back as the decision to acquire the D-5, the British defense budget was under stress from high inflation, increased fuel costs, and salary increases for the military. Despite the annual three percent real increases in defense spending requested by NATO, program cuts were needed. By the 1985-1986 session of Parliament, even the three percent increases were gone (35). From 1985-1986 to 1988-1989, real defense spending will only increase by four percent (36). However, during this time approximately forty percent of the Trident expenditures will come due (37). Trident will consume 5.5 percent of the defense budget and 11.7 percent of the equipment budget in the budget year 1988-1989 (38). The conventional weapons budget has been hurt by Trident with the Royal Navy being hit particularly hard. Its budget in current pounds has

declined since 1986 (39). The order rate of modern, Type 23 frigates has declined (40), and there will probably be a gap in the construction of hunter-killer submarines as facilities are used for Trident boats (41). It is understandable that many in the Royal Navy have come to see Trident as a "serious 'cuckoo' in the naval nest." (42).

The Government has justified these expenditures in two ways. First, it claims that the critics miss the point. While it is true that the conventional weapons budget is hurt, the lost conventional systems could not possibly have anywhere near the deterrence value of Trident (43). Second, the Government points out that conventional weapons programs, especially the Tornado aircraft, have cost even more than Trident. By stating that the capital cost of Trident is only three percent of the defense budget over its entire procurement period (1980-2000) and that conventional weapons systems have cost even more than that, the Government hopes to make the cost of Trident more palatable (44).

The number of objections to Trident continues to die down as the system progresses. Those who wanted the IND to be based on another system have for the most part accepted that now it will be Trident or nothing. The question remains, however, as to whether they were right. Would another IND replacement have met the needs of the U.K. less expensively than Trident?

CHAPTER FOUR

ALTERNATIVES TO TRIDENT

Several different systems would provide Britain with strategic nuclear weapons capabilities. Hobbs lists twenty-three options for an IND including Trident II (1). There are more than that if one wishes to be creative. However, not all systems are equally suited to tho IND role, and the number of likely alternatives to Trident II is considerably smaller than the number of all possible configurations. Before examining the alternative systems, it would be useful to once again note that the British are not looking to add new weapons to an already substantial stockpile. If the a system fails, Britain will be left without any nuclear cover. Therefore, the delivery vehicles must survive even a "bolt from the blue" Soviet strike. The warheads must be able to reach their targets, and the independence of the system must not be easily cut by an outside power. If those three criteria are not satisfied, it does not matter how inexpensive an option is. It would still be a waste of a considerable amount of money to buy it.

When looking at options for the IND, there are two variables that need to be considered: basing mode and delivery vehicle. The three basing modes, ground launched missiles, manned aircraft, and submarines, will be considered first followed by a discussion of some of the more likely delivery vehicles.

Ground launched missiles can be either fixed or mobile. The first option, keeping missiles in fixed silos, can be immediately dismissed as a basing option for the IND. The Soviet Union would have no trouble decimating a small British force. If a system were to be ground based,

it would have to be mobile. Mobile missiles are just as vulnerable as fixed ones when they are at their main base. Therefore, a certain percentage of British missiles would have to be kept dispersed to guard against a "bolt from the blue." Dispersion would mean frequent, large missile convoys moving on Britain's highways and/or railways accompanied by all sorts of political and security problems. Such an operation would keep nuclear weapons in the forefront of peoples minds and could easily evaporate the IND's current popular support (see Chapter Five) (2). Even if these problems could be solved, it is unlikely that even dispersed ground based missiles could meet the high survivability standards necessary for the IND (3).

Manned aircraft are equally vulnerable to a surprise attack. Airfields are large targets that could be easily wiped out in a Soviet first strike. The short flight time of missiles from the Soviet Union to the U.K. would mean that the planes would need to be airborne within minutes of a warning (4). Even then, there is no guarantee that the planes could get away in time. Alternatively, aircraft could be kept permanently airborne. However, support facilities would be expensive to maintain and would be vulnerable to a first strike. Keeping a nuclear weapons carrier permanently airborne above a small country would also present the possibility for a dangerous accident. Finally, if the airfields are destroyed, the British would be faced with either using the IND, whether or not they want to, or losing it. This lack of flexibility is a serious drawback (5).

While the missiles would be seriously vulnerable in both of the above basing modes, there is still a chance that some would survive.

That is not enough for the IND. The vulnerability of the ground and aircraft based systems would give the Soviets a good chance of launching a successful, disarming first strike thereby inviting the attack that the IND is meant to deter. It is immaterial that a few missiles could survive to take revenge. Vengeance is a poor substitute for deterrence. Ground and aircraft basing simply do not satisfy the survivability criterion. Only submarines do. In fact, the Defence Committee hardly mentioned non-submarine based systems in their official report (6). While submarines may eventually become vulnerable to advances in ASW, the other two basing methods are highly vulnerable right now.

Submarines can be armed with either ballistic or cruise missiles. The three main ballistic missile alternatives to Trident D-5 are extending the life of Polaris, buying Trident I C-4 missiles from the U.S., or cooperating with the French on a missile. These three options will be compared to Trident II in turn. A discussion of the relative merits of the cruise missile will follow.

The Chevaline improvements to the Polaris should permit Polaris warheads to penetrate Soviet ABM defenses into at least the middle of the next decade. However, the submarines that the carry the missiles are aging. By the middle of the 1990's, the hulls will be near the end of their life. Even if hull life could be extended, the submarines will become increasingly noisy with age and therefore more vulnerable to improvements in Soviet ASW. As the propulsion and other systems get older, maintenance time and costs will rise, and other age related defects might emerge. These problems could be serious enough that it would be impossible to guarantee at least one submarine on patrol at all

times (7). Even if the Polaris missiles themselves are kept, the submarines that carry them would have to be replaced.

The current Polaris missiles have a range of 2,500 nautical miles. There was some consideration given to upgrading the motors of the Polaris missiles to increase their range, although not even to the standards of Trident C-4 (8). The reduced range of the missiles is some matter for concern, especially if only four new submarines are produced. Four boats can only guarantee that one submarine will be on patrol at all times. That submarine would have a limited area of operations in which Soviet ASW efforts would be concentrated in a war. This puts the level of survivability of even an enhanced range Polaris missile below that of the same size fleet of Trident D-5 submarines. However, placing the old Polaris missiles in new submarines would be substantially less expensive than Trident II raising the possibility of building a fifth submarine. It could then be guaranteed that at least two boats will be on patrol at all times countering the problem of reduced range.

Polaris is not nearly as accurate as Trident D-5, but it is accurate enough for the British targeting doctrine. It has been the vehicle for that doctrine since the late 1960's. Two other factors are of greater importance when considering Polaris. First, the missiles may no longer function reliably given their advanced age. While flaws could be detected and fixed, albeit at a price, such detection requires a testing program which Britain may find too expensive to operate (9). Second, even with the Chevaline upgrade, the warheads may not be able to penetrate Soviet ABM defenses in the next century (10). However, specific evidence of this eventual lack of penetration ability was not

even given to the Defence Committee. The Gilbert alternative to the 1981 Defence Committee report expressed concern that the Ministry of Defence was ignoring a much less expensive option in order to cover ABM challenges that may not emerge (11). As it turns out, the Chevaline program probably was not needed, but Britain may not be so lucky in the future.

If the Polaris missiles eventually do become vulnerable to Soviet ABM defenses, a modernization or replacement program, probably including expensive new missiles and possibly new submarines, would be needed well before Trident II would have to be replaced. Sticking with Polaris means gambling that Soviet ABM improvements will be minor (12). It should be remembered that each Polaris submarine can carry only forty-eight non-MIRVed warheads which can be aimed in groups of three at only sixteen targets. Hobbs considers this target coverage to be insufficient for effective future deterrence (13). Even if the British only wanted to hit Moscow, and that city is almost definitely on the target tapes, the ABM Treaty allows the Soviets to install up to a hundred defensive missiles around Moscow. Therefore, there is some chance that the Soviets might be able to defend Moscow from a Polaris attack even if the ABM Treaty remains intact. Since the British can afford only one strategic nuclear system, it would be best if the doubts about its ability to penetrate Soviet defenses were minimal.

Polaris would definitely be an independent system. The production lines for the missiles and related equipment will all have been long closed by the time that the new submarines are ready. Also, Britain would be the only major nuclear nation using such outdated technology.

The U.K. would have to pay extra to have many of the needed parts custom manufactured. The necessity of maintaining such outdated technology is a definite drawback (14). On the question of operational independence, the British consider Polaris to be independent enough now to be used without U.S. input. There is no reason for that to change in the future. In fact, all of the ballistic missile systems under consideration satisfy the criterion of operational independence.

Cost is a major consideration with keeping Polaris. The capital cost of this option will be much lower, but future events may nullify the initial advantage. Putting the old missiles in new submarines would cost around L3,000 million, forty percent of the capital cost of the Trident I system and clearly less the more expensive Trident II (15). Estimates for an enhanced range Polaris place its cost over that of the Trident I system, but probably less than Trident II (16). The unique, technologically obsolete Polaris system would cost Britain more to operate than will the Trident II system (17). The authors of the Gilbert Report were not convinced that, compared to the C-4 system then under consideration, the extra operational costs would offset the initial capital savings (18). If the operational savings would not offset the capital savings with C-4, then they certainly will not with D-5.

The question is whether Polaris will remain an effective system until 2020. If it turns out that, looking at the situation in 2020, Polaris would still be able to penetrate Soviet ABM defenses, then the Thatcher Government would have missed a bargain. If the opposite is true and, well before 2020, ABM defenses progress to the point that Polaris warheads could be stopped, then the Government has saved money by buying

a modern system now. The latter is likely enough to conclude that Polaris should be honorably retired in favor of a more up to date system.

The C-4 option is harder to dismiss. The U.K. once considered purchasing the C-4 to replace Polaris and only changed its mind when the Reagan Administration in October, 1981, two years earlier than expected, decided to develop the D-5 (19). Minister of Defence Nott acknowledged that C-4 would have been "sufficient" for Britain's deterrent needs. He denied that Britain switched to D-5 missiles for their extra capabilities. Rather, Nott justified the change on the advantages that come from maintaining commonality with the U.S. (20). No details are given, but it is claimed that the life cycle costs of operating a unique C-4 system will more than offset its initial savings over the D-5 (21). Whether or not those life-cycle cost estimates are true is the real question.

Trident C-4 missiles have a range of about 4,000 nautical miles with eight warheads, the number that the U.K. planned to use (22). This would give the a C-4 submarine more than enough ocean in which to hide. The 2,000 nautical miles extra range of the D-5 is an unnecessary bonus.

The accuracy of the C-4 is an improvement over that of Polaris, which was already judged capable enough given the British targeting strategy. The C-4 is also a MIRVed missile (23). With eight warheads per missile and sixteen missiles per submarine, the U.K. would have 128 warheads on patrol at all times. This should be enough to counter Soviet ABM improvements for a long time.

The C-4 missile presents the same problems of uniqueness that Polaris does. The C-4 entered service with the U.S. Navy in 1979. It

was assumed at the time that the U.K. decided to buy C-4 that there would be at least some overlap between the U.S. and the U.K. forces giving the U.K. the advantages of commonality with the United States. Reagan's decision to accelerate the D-5 program moved the introduction date of the missile to 1989 (24). C-4 will leave service with the U.S. by the late 1990's, only a few years after the U.K. will have started using the C-4. The overlap period will be less than that of Polaris. The U.K. will lose the operational benefits of learning from the experiences and testing program of the U.S. Navy. Britain can not afford a testing program on the same scale as the U.S. can. If a major repair or improvement program is needed, Britain will have to pay the full cost. The remotoring of and Chevaline enhancement to the Polaris missiles show how expensive such programs can be (25).

The capital cost for a C-4 missile system in September, 1980 prices was L5,100 million. Switching to D-5 missiles added L390 million to the cost. The expense of the larger hull needed to carry the D-5 is hidden in a L500 million submarine improvement package which also includes a better sonar and a better propulsion system (26). It is therefore difficult to tell the exact cost of converting to D-5. It is also difficult to figure out how much more expensive it would be to operate for twenty-five years a missile system unique to the U.K. (27), and the Ministry of Defence does not give any figures.

One cost advantage of the D-5 is that the missiles will be serviced in the U.S. base at King's Bay, Georgia. This shift saved L770 million in construction costs offsetting to a large degree the expense of moving to D-5. The U.K. will pay around L9 million a year to compensate the

U.S. for operations at King's Bay that are related to the U.K. portion of the workload (28). The King's Bay arrangement probably means that there will be a savings on missile upkeep compared to independent U.K. maintenance of C-4. The definite reduction in capital costs and the probable reduction in lifetime missile maintenance costs when taken together cancel out the added expense that the switch to D-5 initially represented. Should a mid-life upgrade be necessary for Trident, it will be less expensive for the British to share the costs with the U.S. on a D-5 improvement rather than to independently upgrade the C-4 (29). In fact, the advanced capabilities of the D-5 make the chances for a necessary upgrade less likely than with C-4.

The C-4 is better matched to the requirements of the U.K. than is the D-5 with all of its added capabilities. If the advantages of commonality with the U.S. could have been maintained, the C-4 would have been a better, less expensive choice than the D-5. However, it seems likely that the C-4 will have a higher lifetime cost than the D-5 tipping the scales in favor of the latter.

The last ballistic missile option that will be considered is the purchase of a French system. The data does not indicate that the British Government seriously considered this option. Pym, without further explanation, dismissed a European project as not as capable as but more expensive than Trident C-4 (30). The lack of consideration given to French systems makes details on them scarce. There is also little evidence that the proponents of the French option considered whether or not France would be willing to sell nuclear missiles to Britain (31). At best, the French would be reluctant to make such a sale (32). However,

had Britain decided to approach the French with an offer, there were two possible missiles that it could have bought from them, the M-4 and the M-5. Since the M-5 only started development in 1987 (33), there is no way that it can be ready in the time necessary for a Polaris replacement. That leaves the M-4. Any deal would involve Britain buying French missiles and providing its own warheads and submarines (34). Britain has the technological lead in the latter two areas (35).

The M-4 is about the size of a Polaris missile. It can carry six, 150 kiloton warheads. The M-4 has a range of 2,200 to 2,600 nautical miles, about the same as Polaris (36). This does restrict the operating room of the British submarines to potentially hostile waters.

Hobbs also expresses doubts about the reliability of the French missiles (37). This would be of special concern to the British given the small size of their IND. No details are given anywhere on how vulnerable the M-4 warheads will be to improvements in Soviet ABM defenses.

Independence from the U.S. is a mixed advantage of M-4 missiles. Whatever the U.S. does, the British and the French could still keep their independent deterrents. There is less of a chance that the French will back out of a cooperative effort since their geographical proximity means that both nations are "strategically locked together." (38). The problem with this independence is that it could have a seriously detrimental effect on the nuclear relationship between Britain and the United States. The U.S. may even feel compelled to halt information exchanges with the British. The U.S. is NATO's nuclear superpower. Its nuclear technology is more advanced than that of France. Therefore, the British should think carefully before they damage the U.S./U.K. special relationship.

Alford recommends trying the French option only if the U.S. were to end nuclear cooperation (39).

It is doubtful that the M-4 would have been substantially less expensive than the Trident D-5. Hobbs estimates the capital cost of the M-4 option at L6,000 million at 1983 prices (40). Trident D-5 costs were estimated at L6,984 million that year (41). The capital cost advantage of the M-4 would probably be offset somewhat by operational savings with D-5. Also, the D-5 is a much more capable system with more than twice the range of the M-4. In the end, the lesser abilities of the M-4 and the dramatically increased political costs do not make up for the financial savings it would offer.

Before ending discussion of the French option, it should be noted that the British and the French are considering joint submarine patrols to avoid wasting their minimal nuclear resources on duplicate targeting. Such useful cooperation would make the most of both small forces without disrupting Anglo-American relations (42).

Of all the ballistic missile options, Trident D-5 is clearly the most capable. While its procurement costs are the highest, potential savings over its lifetime resulting from commonality with the U.S. will probably offset the initial disadvantage. This will certainly be true if a missile improvement program becomes necessary. Trident's dependence on the U.S. for maintenance is a drawback, but such a situation is unlikely to emerge. If it does, the long life of the D-5 missile provides enough time to make alternate arrangements. In the end, if the Polaris replacement is going to be a ballistic missile, the right choice is the Trident D-5.

Ballistic missiles are not the only option for a Polaris replacement. Many influential people have advocated cruise missiles as an effective, inexpensive solution to the Polaris replacement problem. For example, Dr. David Owen, former Labour Foreign Secretary and now leader of the Social Democratic Party, has always been an ardent supporter of cruise missiles (43). The merits and problems of this option will now be discussed.

The U.S. Tomahawk sea launched cruise missile has a range of about 1,600 nautical miles, and it must be fired within 500 miles of land to ensure accuracy. In comparison, Polaris submarines can fire a missile from up to 2,500 nautical miles away from its final target. Trident D-5 missiles, with their 6,000 nautical mile range, provide their submarines with fifteen times more hiding space than the Tomahawk (44). However, compared to ballistic missiles, cruise missiles are more discrete and less likely to reveal the position of the submarine that launched them. The British could possibly fire a warning shot without having to worry as much that the launching submarine, and the rest of its missiles, would be found and destroyed (45).

Many have suggested equipping Britain's hunter-killer submarines with cruise missiles. The U.S. has already installed cruise missiles on its hunter-killers (46). If the British were to do the same, they would have to use vertical launchers since, unlike the American boats, launch tubes will not fit in between the inner and outer hull of British hunter-killers (47). Carrying missiles in torpedo rooms is feasible, but it takes away space needed for torpedoes.

There are some advantages to this basing mode. First, the IND would

be spread among many more submarines than would be possible with a system strictly committed to the IND. Second, British ASW efforts would not be harmed by the disruption in the hunter-killer build rate caused by constructing submarines only for the IND. Third, at least some of the hunter-killers will normally operate within range of the Soviet Union anyway. Finally, it could cost as little as twenty-five to thirty percent of the Trident total (48).

There are also problems with hunter-killer basing of cruise missiles. First, it is doubtful that the hunter-killers could carry enough missiles to provide for effective deterrence (49). Second, there is a conflict between the role of a missile submarine and that of a hunter-killer. A missile submarine must remain safely hidden from enemy shipping while a hunter-killer's job is to find and destroy that shipping. In a war, using hunter-killers for their intended mission would mean risking the IND (50). While the U.S. has put cruise missiles on some of its hunter-killer submarines, it still relies on committed ballistic missile submarines for the undersea leg of its strategic triad. Holding some hunter-killers back to save their missiles would cut the effective number of hunter-killers by as many boats as would a gap in the construction cycle to manufacture submarines specifically for the IND. The submarines held in reserve could not carry as many missiles as could boats designed expressly for the IND. If cruise missiles are to be used, they should be based in submarines designated only for an IND mission.

The number of committed cruise missile submarines depends on how many warheads are desired. A British Trident submarine could carry up to eighty single warhead cruise missiles (51). The main question is how

many of those missiles would reach their targets, and there is no consensus here. Cruise missiles are designed to avoid detection by flying close to the ground where their small size makes it hard for them to be distinguished from ground clutter by visual, radar, and infrared sensors. They can also vary the path to their targets to avoid known air defenses. Once a cruise missile is found, however, its slow speed makes it vulnerable to missiles and anti-aircraft fire (52). A supersonic cruise missile would spend less time reaching its target reducing the chances of it being found. Even if it were found, its high speed would make countermeasures more difficult. However, nobody has been able to develop a successful, supersonic cruise missile, and the development of one does not appear likely in the near future (53). Therefore, the debate comes down to whether or not subsonic cruise missiles will be able to avoid detection.

Ballistic missile defenses are limited by treaty while cruise missile defenses are not (54). The means to defeat cruise missiles are already in existence; advanced "Star Wars" technology is not needed. Since the U.S. will deploy over nine thousand cruise missiles, the Soviets will definitely increase their anti-cruise efforts (55). In fact, the U.S. Department of Defense describes Soviet progress in its anti-cruise missile efforts as "significant." (56). While it must be noted that Soviet Military Power tends to give the Soviets the benefit of any doubts regarding their military capabilities, the essential point is that Soviet cruise missile defenses have improved over the years and will continue to do so. These developments would be especially worrying to the U.K. because, unlike the U.S., it cannot deploy enough cruise

missiles to overload Soviet defenses.

On the other hand, there are factors working to improve the penetrability of cruise missiles. They are already hard to spot against background clutter even with look-down radar. The U.S. had trouble doing so about nine years ago with its most advanced look-down radar at the time (57). The Soviet Union has just started to introduce look-down radar and should experience similar difficulties (58). The Soviet job will be made even tougher if new Stealth technology is used. It has been estimated that the effective radar reflecting surface of the missile can be reduced to the size of a cricket ball (59). Chances of penetration would also be helped in a conflict where Soviet defenses have already been thinned or when they are not in the right positions to stop cruise missiles due to commitments to other operations. When all of these factors have been taken into consideration, it is probably safe to assume that, were Britain to act on its own, half of the missiles would reach their targets (60).

Cruise missiles could be either highly dependent on or independent of the United States. If the U.K. is able to buy U.S. missiles, there are still questions as to whether the U.S. would sell Britain its most advanced guidance and Stealth technologies (61). Cruise missiles are guided by an inertial system augmented by matching the terrain over which the missiles are flying with an internal map. With this system, it can place its warhead within thirty meters of the intended target (62). However, the internal map needs regular updating. Without fresh information, cruise missiles probably are not accurate enough to carry out even the British targeting policy. The U.K. does not have satellites

which could provide the necessary maps. The British would have to rely on the U.S. for new information. This would give the U.S. more control over the British deterrent than would be possible with a ballistic missile system. Trident D-5's age more slowly than cruise missile guidance maps.

An independent British project to build its own missile and support systems, including mapping satellites, would not be impossible, but it would be very expensive (63). Owen raises the prospect of collaboration between the British and other European nations (64). Such an effort would spread the development costs over several nations, and the European missiles would be capable of both nuclear and conventional missions so that many nations could use them. The end result would be total independence from the United States.

The cost of a cruise missile deterrent varies with the amount of capability desired. Younger estimates that it would take four hundred cruise missiles at sea at all times to yield a deterrence value equivalent to Trident (65). At eighty missiles per submarine, it would take five submarines to house four hundred cruise missiles. To maintain five boats on patrol at all times requires eight in the operating cycle. Taking refits into consideration adds three more submarines for a total of eleven. It would take eight hundred missiles, allowing for twenty-five percent of the missiles in maintenance at any given time, to arm the eight boats in the operating cycle. While Younger does not give any numbers, it is clear that such a system would cost far more than Trident to build and operate. It would also put a serious strain on manpower.

Some of Younger's figures are questionable, however. Assuming that half of the cruise missiles launched would get through, it would take only around three cruise missile submarines to deliver the same number of warheads as a single Trident boat armed with 128 warheads (66). Even with these reduced numbers, Trident's ability could not be matched less expensively with cruise missiles. However, it is not necessary to match Trident. With five submarines, two could be on station at all times for a total of 160 cruise missiles (67). Assuming that half the missiles reach their targets, the two submarines could destroy five times as many targets as a single Polaris boat. It would not be advisable to provide for any fewer than five submarines. The range of a cruise missile is so short that the cruise missile submarines would have to operate in dangerous waters. It would not make sense to have only one boat on patrol under these conditions. Using the figures Hobbs presents, a five submarine force with eighty missiles per boat would cost from L3,750 million to L4,000 million at 1983 prices (68). Once again, the capital cost of the Trident II program was placed at L6,984 million in 1983.

Operating expenses are harder to estimate. It will cost more to operate five boats rather than four. Another variable is improvements in Soviet defenses. With Trident, new warheads could be added to the missile in an attempt to stretch Soviet ABM defenses enough to get some warheads through. With cruise missiles, more missiles, and possibly more submarines, would be needed, an expensive proposition (69). Cruise missile technology is advancing rapidly. British forces would fall behind the times faster if they were armed with cruise rather than with ballistic missiles. It can be asked whether Britain could afford

frequent upgrades or even whether the U.S. would be willing to sell the U.K. its most advanced cruise missile technology (70). Trident, however, might also require an expensive mid-life improvement program. It is very difficult to tell whether Trident or submarine launched cruise missiles would eventually be more expensive, but the capital costs of the cruise option are low enough to provide a considerable margin for error.

The final question is whether the definite extra capital cost and the probable extra total cost of Trident is justified by its advantages in capability over a minimum cruise missile force. It is a question that is almost impossible to answer objectively. In my opinion, Trident is worth it. The IND is an important component of the British military. It would become even more important if the U.S. nuclear guarantee of Europe ever became suspect. The British plan to operate only one system. That system must therefore have proven reliability and effectiveness. Experiments with new systems should be left to the superpowers that have enough backups to negate a failure. It is interesting that both of them rely on ballistic, not cruise, missiles to form the main part of their strategic deterrents. Britain needs a total replacement to the IND merely once every twenty-five to thirty years. The total cost of a cruise missile force is unlikely to be very much lower than the total cost of Trident. If the IND is to be accepted in principle, then the best choice for a replacement system is Trident II.

CHAPTER FIVE

ARMS CONTROL, PUBLIC OPINION, AND FUTURE PROSPECTS

Chapter One looked into the past of the IND, and Chapters Two through Four examined the options for the present. This chapter is devoted to the future. More specifically, it will examine the likely impact of arms control and British politics, both at the popular and at the party level, on the future of the IND.

The arms control philosophy of the Conservative Government can be summarized in a 1932 quote from Winston Churchill.

> The cause of disarmament will not be obtained by Mush, Slush, and Gush. It will be advanced steadily by the harassing expense of fleets and armies, and by the growth in confidence in a long peace. (1).

In other words, the Conservatives endorse "consistent and firm" Western policy. The success of the "dual track" approach of simultaneous arms control negotiations and weapons deployment used in the Intermediate Range Nuclear Forces (INF) Talks is taken to be a vindication of the merits of this policy (2). It is held in contrast to the failure of unilateral moves on chemical weapons. The British renounced chemical weapons in the late 1950's, and the U.S. halted production of them in 1969. Despite these gestures, the Soviet Union continued to increase its stockpiles (3). Only recently has there been any progress in this field. Given the military might of the Soviet Union, the U.K. is understandably cautions in its approach to arms control.

This attitude is clearest in the area of nuclear arms control. The INF Agreement is a good example. Britain officially supports this treaty and will allow Soviet inspections at the two U.S. cruise missile bases at Greenham Common and Molesworth (4). The official rhetoric, however,

hides a considerable amount of anxiety.

Ever since the Soviet Union gained the ability to directly threaten the U.S. with nuclear weapons, many in Europe have been concerned about the U.S. nuclear guarantee of NATO. They are worried that the U.S. would not be willing to use its nuclear weapons in defense of Western Europe due to fear of a devastating Soviet retaliation. This fear is particularly strong in European conservative parties. In fact, they even campaigned for deployment of U.S. INF forces in the early 1980's. The belief was that the U.S. would be more willing to use nuclear weapons to defend Europe if those weapons were based in Europe, if only to avoid losing the missiles to advancing Soviet forces. U.S. INF deployments were thought to help tie, or "couple," the U.S. to the nuclear defense of NATO. The loss of the INF weapons could reduce this "coupling." The elimination of INF forces also weakens the arguments of people like Prime Minister Thatcher that nuclear weapons are necessary to the defense of Europe. Many European governments used the chance of a "zero option" of no INF missiles in Europe to satisfy public demands for arms control. They actually wanted a more limited treaty which would keep U.S. INF weapons, and the "coupling" they provided, in Europe, albeit at lower levels (5).

The British, with the support of most of the rest of NATO, even proposed that nuclear weapons with a range of under five hundred kilometers be excluded from the INF talks citing their deterrent value and the difficulty of verifying their removal (6). In fact, the British are currently examining the options for modernizing their free-fall nuclear bombs with a stand-off, air launched tactical missile (7). The

actions of Prime Minister Thatcher's Government are in line with her statement that "A nuclear-free Europe, I do not believe, would be a war-free Europe." (8).

Britain shares the NATO goals of cutting the strategic arsenals of the superpowers in half, eliminating chemical weapons worldwide, and stabilizing the European conventional balance of power by eliminating numerical disparities. The British have proposed that further nuclear reductions in the European theater be delayed until those three goals are accomplished (9).

From the above framework, it can be seen that the Conservative Government, while not against arms control, is cautious in its dealings with the Soviet Union. It is also committed to nuclear deterrence as long as the numerical superiority of WTO conventional weapons remains. That commitment to nuclear deterrence extends to the IND. In 1983, the Government resisted the inclusion of its Polaris missiles in the INF talks (10). General Secretary Gorbachev resolved this issue at the Reykjavik Summit by saying of the British and French deterrents, "let them increase...and be further improved." (11). The IND is not included in any of the current negotiations and, should the Conservatives remain in power, will not be put on the table for a while. If Gorbachev's actions are in accordance with the words of his statement, then even Trident should not affect ongoing negotiations. The Conservative policy is to wait for cuts in the superpower arsenals beyond the proposed fifty percent. If these reductions were to occur and there were no substantial improvements in Soviet defenses, then the U.K. would consider what contributions it could make (12).

Trident offers some flexibility for arms control. The number of warheads per missile could be reduced allowing Britain to retain an effective IND but at a lower level. Trident is also a large, single purpose system. These characteristics reduce the verification problems that are possible with small, easily concealed, dual purpose cruise missiles.

The small size of the IND, even after the introduction of Trident, leaves it vulnerable to improvements in ABM defenses. While a total shield against a superpower attack may prove impossible, technological advances could provide a system that would be able to stop a smaller nuclear strike. Given the Conservatives' commitment to nuclear deterrence in the face of WTO quantitative, conventional superiorities, they are understandably nervous about the American Strategic Defense Initiative (SDI) and anxious to preserve the ABM Treaty (13). A worst case scenario for Western Europe would be an effective shield which could protect the superpowers from each other making nuclear deterrence impossible (14).

The official Government policy cautiously supports SDI subject to conditions agreed on by Prime Minister Thatcher and President Reagan in 1984 and 1986. SDI research allowed under the ABM Treaty should continue, but deployment would have to be a matter for negotiation. The overall goal is to maintain balance with the Soviets and to enhance deterrence. Negotiations should aim for security by reducing offensive systems on both sides, and there should be close consultation among the members of NATO on the above points (15). Essentially, these points are designed to maintain nuclear deterrence,

reduce numerical disparities, and hopefully avoid any surprises from the United States.

The Conservatives are determined to protect the IND, and their policies are designed to do so. However, there is no guarantee that they will retain their majority in Parliament forever. The future of the IND could change dramatically if another party were to gain control of the House of Commons. Throughout the history of the IND, the major decisions have been made at the highest levels of government, often times secretly among a few select cabinet members. However, it was the people who elected those Governments, and it is unlikely that a future Government will continue with the IND if the British people strongly object to it. Therefore, any look at the political future of the IND must start with an examination of public opinion.

The majority of the British people favor a strong defense. Fifty-two percent believe that a country that reduces its defenses is more likely to be attacked because it cannot defend itself (16). Eighty-eight percent believe that treaties with the Soviet Union should contain reliable verification measures (17), and 76% feel that declaring an area a "nuclear free zone" has no effect on the chances of that area being targeted (18).

Support for the IND is also strong. Lewis has been commissioning Gallup polls since 1985 asking, "Do you think Britain should or should not continue to possess nuclear weapons as long as the Soviet Union has them?" Support for the IND has never dipped below 66% (19). The statistical breakdown on the most recent poll, March, 1988, reveals that support for the IND never goes below 64% in any gender, age, or class

group (20). Splitting the data by party, probably a more politic. ly relevant breakdown, shows that 87% of the Conservatives, 69% of the supporters of the center parties, and even 53% of Labour voters back the IND (21). A more recent MORI poll of trade unionists reveals 60% support the IND. Only when the results were restricted to Labour trade unionists does the support for the IND drop to 46% (22). It is interesting that a substantial percentage of Labour voters do not support their party's policy of unilateral disarmament.

Trident is less popular than the IND, however. After eight years it has yet to get the support of a majority of the people even though more people support it than oppose it. In his poll, Lewis also asked whether the Trident program should be completed. Forty-six percent said "yes" compared to 37% who said "no" and 18% "don't know." The "yes" responses are up from 43% in 1987 while the "no" responses held steady (23). It seems that support for Trident is slowly growing as the program nears completion, but that support does not appear to be deep. The breakdown of the results reveals that more men, people over twenty-four, and people above the lower two classes support Trident than oppose it (24).

The party statistics show 64% of Conservatives, around 49% of the supporters of the center parties, but only 26% of Labour voters behind Trident (25). The Labour support for Trident is less than half of its support for the IND in general. Labour supporters possibly like the idea of an IND but are at a loss to pick a successor to Polaris. This would mean that support for Trident will approach support for the IND as the system becomes operational and fades into the background. On the other hand, the lack of support for Trident could be genuinely based on dislike

of the system itself. In this case, it would be easier for a Labour Government to cancel Trident. The former is probably closer to the truth.

Another, more politically relevant illustration of support for the IND is the 1987 general election. The Conservative Manifesto proclaimed support for Trident and the presence of U.S. nuclear weapons on British soil. It accused the other two major parties of desiring unilateral nuclear disarmament (26). This charge is not entirely true. The Alliance of the Liberal and Social Democratic Parties renounced Trident but supported an unspecified modernization of the IND until it could be negotiated away as part of a global arms control process. The Alliance accepted the presence of U.S. nuclear weapons on British soil subject to a British veto over their use (27). Part of the reason for the Alliance hedging was that the Liberals tended to be more anti-nuclear than their SDP partners (28). The Alliance Manifesto represented a compromise position. Labour promised to cancel Trident, decommission Polaris, and ask the U.S. to remove its nuclear weapons from British soil (29). In fact, Labour leader Neil Kinnock declared that he would recall all of the Polaris submarines within two weeks of a Labour victory (30).

The Conservatives were able to use defense issues to their advantage. Labour leaders knew from the start that defense was the weakest part of their program. They were not helped when General Bernard Rogers, NATO's Supreme Allied Commander, Europe, predicted that the implementation of Labour's policies would cause the U.S. public to call for the return of U.S. troops (31). The Conservatives used defense as their major weapon against Labour and were able to increase the number of

people rating it as a major issue by 13% during the campaign (32). A poll released on May 31 showed the Conservatives were trusted most on defense by 51% of the voters compared to 23% for Labour and only 13% for the Alliance. On the other hand, only 16% of the voters listed defense among the two main reasons that they did not plan to vote Conservative compared to 45% for Labour. Issues other than defense hurt the Alliance most. The efficacy of the Conservative tactics on defense is shown by the fact that Labours' negative rating on defense was only 35% on May 17 (33). It seems clear that Labour's anti-nuclear position cost it votes.

Whether or not the Conservatives can use the defense issue as effectively in the next election is debatable. Many Conservatives were worried that, without Labour's weakness on defense, the election would have been much closer (34). The public support for the IND will probably remain. If tensions in the world continue to decline, however, other issues may become more important than keeping the IND. It is ironic that the Conservatives could eventually be hurt by the progress in East-West relations that their policies helped to bring about. A public feeling more secure might be willing to ignore Labour's unilateral disarmament policies in order to support the party on the "caring" issues where Labour has an edge over the Conservatives. In fact, "not caring" was the Conservatives' biggest negative. Among the voters who did not vote Conservative, 60% listed "not caring" as one of the top two reasons for not supporting the party (35).

The Conservative position would be improved if the public were knowledgeable about defense issues. Unfortunately this is not the case. Returning to the survey of Rose and Blaker, only 30% realized that the

WTO outnumbers NATO in conventional arms (36). Only 4% realized that the IND costs Britain less than 5% of its defense budget (37). The percentage of those saying "don't know" was high for all of the factual questions. Despite this ignorance, the U.S. and the Soviet Union were virtually tied, with very few "don't knows," when it was asked which one posed the greater threat to Europe (38). It is interesting to note that the people who knew the least about the real balance of power were the most likely to say that the U.S. posed the biggest threat (39). It may seem strange that so many people support the IND despite being uninformed on the details of defense and disarmament. Blaker explains this discrepancy by theorizing that, while people are not interested in the details, they generally realize that the Soviets are threatening and that strength deters aggression (40). In other words, the attitudes of the British public towards defense are based more on feelings than on facts.

This lack of factual knowledge does leave the British public open to propaganda appeals from the Soviet Union. It would definitely be in the interests of the Soviet Union to eliminate the British and the French deterrents. First, Soviet military calculations would be made easier by the elimination of these two "second decision making centers." Second, the U.K. is seen as an important influence on the U.S., especially in helping to maintain the U.S. nuclear guarantee of Europe (41). If the U.S. and the Soviet Union are able to negotiate arms reductions in the next few years, Britain's Trident modernization, which would increase the number of British warheads, could make Mrs. Thatcher appear to be "the odd woman out." (42). The Soviets have already tried to pin that image on her. After the Prime Minister visited Moscow in 1987, one Soviet

commentator contrasted Thatcher's position on nuclear [illegible] with the position in favor of total nuclear disarmament almost taken by President Reagan at the Reykjavik Summit. Prime Minister Thatcher was diagnosed as having "nucleophilia." (43). As arms control progresses, it would be wise for the Conservatives to make their position on the subject clear and to provide easy to understand answers to the public's questions (44).

As stated above, barring a dramatic arms control breakthrough or a nuclear accident, public support for the IND is likely to remain strong. It has lasted for decades and will probably not fade away quickly. Conservative strength on this issue may increase a lead in an easy election and could push the party over the top in a close one. It would not be enough to offset, for example, a serious downturn in the economy. While the people select the party which will form a Government, it is eventually that Government which must decide the future of the IND making it necessary to examine the positions of the various parties on the subject.

The next election is several years away. Party policies could change by then, but the party conferences last fall provide the most recent indicator of where the parties are heading. The news reports about the Conservative conference in Brighton did not mention any changes in defense policy. The conference itself basically endorsed Conservative policies across the board leading The Economist to claim that the only objections to motions came from those who did not believe that the motions praised the Government enough (45).

During the last election, the centrist Alliance of the Social Democratic Party and the Liberal Party preached the value of unity.

After the election, the Alliance broke up. There was some discussion of defense at the SDP conference in Torquay. Dr. David Owen's party, freed from the political constraints of the Alliance, came out in favor of not only the IND but also Trident (46). Dr. Owen had preferred a cruise missile based IND. The switch probably comes less from support of Trident and more from the fact that the project is too far along to permit any major alterations. The defense policy of the new Social and Liberal Democrats (essentially the old Liberal Party) is much less clear. At their Blackpool conference, the big issue was the name of the party rather than defense (47). The leader, Paddy Ashdown, has a record of supporting unilateral nuclear disarmament, but there is no consensus among the rest of the party members (48). The views of these two parties will probably not be that important since combined they only have twelve percent of the vote, down from the twenty-three percent the Alliance received in the 1987 election (49).

The big question is the Labour Party. It is the only opposition party that has the potential to defeat the Conservatives and institute an alternative defense policy. For a long time there was little difference between the Conservatives and Labour on defense. Labour Governments decided to build the bomb, continue Polaris, and continue Chevaline. It was not until the early 1980's that the unilateral disarmers in the party were able to put their ideas in the platform under the leadership of Michael Foot. That policy has cost Labour votes in the past two general elections, and some of the party leaders have considered softening Labour's unilateralism to make it more acceptable to the voters. Over the past summer, Labour leader Neil Kinnock caused an uproar when he

suggested that Britain could negotiate a "something for something" disarmament deal with the Soviet Union rather than giving up the IND in a "something for nothing" move. Kinnock's proposal even cost him his defense spokesman, Denzil Davies, who resigned accusing Kinnock of changing Labour defense policy almost daily (50).

Despite being reelected to the post of party leader by a large majority at the party conference at Blackpool, Kinnock lost a major vote on defense policy. The Labour leadership sponsored a motion calling for the elimination of nuclear weapons "by steps of unilateral, bilateral, and multilateral disarmament." The motion was defeated by a majority of 335,000 (51). Important in that defeat was the block vote of 1.25 million against the motion by the Transport and General Workers Union leader Ron Todd (52). The conference did approve by a 1,244,000 majority a motion calling for Britain to unilaterally remove all nuclear weapons and bases from its soil within a year of gaining power. Another motion advocating the transfer of savings from nuclear disarmament to social programs was carried by a 480,000 vote majority (53). That vote directly contradicts a pledge in Labour's last Manifesto to use the money saved from nuclear disarmament to upgrade conventional forces (54). It leads to questions as to whether an IND cancelled under a Labour Government would really lead to a greater investment in conventional weapons.

The vote on defense at this past conference was not final. Formal Labour defense policy will not be settled till next year. Kinnock has warned that Labour will find it difficult to win if it is not trusted on defense issues. He and other Labour leaders hope that a more moderate defense policy can be approved by the party at that time (55).

CONCLUSION

Britain has been involved with nuclear weapons from the start of the nuclear era. During this time, the U.K. has gone from a pioneer nation to one which is dependent on another country for the weapons of its deterrent. The debate over Trident has raised many questions including whether or not there should be an IND at all. Unfortunately, there are no clear, unproblematic answers to those questions, and I have tried to convey their inherent complexity. However, despite the difficulties, the issues surrounding the IND cannot be ignored; decisions eventually must be made. The following paragraph contains the conclusions that I have reached after examining the issues related to the British IND.

The IND makes a contribution to deterrence, and it should be kept and modernized. However, it must be realized that the expense of nuclear weapons systems makes Britain dependent on the U.S. in the long run even if the U.S. cannot prevent Britain from using the weapons it has. The Thatcher Government chose correctly when it selected Trident II. It has more capability than Britain really needs, but the other systems, for various reasons, do not satisfy the requirements of a minimum deterrent as well as Trident II does. The IND will not harm current or planned arms control negotiations although it will eventually have to be put on the table. Public support for the IND remains strong as demonstrated by polls and election returns. However, the strength of the Conservatives on defense probably would not be enough to sustain their Parliamentary majority should they be damaged by other electoral factors. Finally, the existence of the IND is threatened by the unilateral disarmament policies of Labour. Whether or not Labour acts on those policies or follows the

lead of past Labour Governments in maintaining the IND is unknown. In any case, it can only be hoped that the British act thoughtfully and that their actions, whatever they may be, make a contribution to the goals of a free Britain and a secure world peace.

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2. With Trident, Britain will have a total of 512 strategic warheads. The U.S. has 14,637 strategic warheads while the Soviet Union has 11,694. Of those, 9,029 of the U.S. and 10,074 of the Soviet warheads are mounted on ballistic missiles ensuring a high degree of penetrability. Given these numbers, a British Trident based IND represents 3.5% of the U.S. strategic arsenal (5.7% of the ballistic missile based arsenal). The comparable figures for the Soviet Union are 4.4% and 5.1% respectively. IISS, Military Balance 1988-1989, 230-232. (SALT numbers, the START numbers underestimate the actual warhead totals).

3. Michael Evans, "Polaris patrols go on as Navy prepares for the Trident era: Submarine crews on constant alert in the battle to remain to undetected," Times (U.K.), 12 November 1988, sec. A, p. 4.

4. DOGD 87/01, par. 2.

5. Nott, cols. 975-976.

6. David Hobbs, Alternatives to Trident, Aberdeen Studies in Defence Economics Occasional Papers, no. 25 (Aberdeen, Scotland: University of Aberdeen Centre for Defence Economics, Summer 1983), 7.

7. Defence Information Groups, Alternatives to Trident D5, Part One of Two (n.p.: British Defence Policy Group, August 1986), 6.

8. Hobbs, 34.

9. .8 X 16 = 12.8 rounded down to the nearest whole missile.

10. Evans, 4.

11. DOGD 80/23, par. 12.

12. Robin Cook, "Britain abandons nuclear deterrent," New Statesman, 19 March 1982, 4.

13. Hobbs, 14.

14. Ibid., 14-15.

15. Nott, col. 976.

16. Ward, written notes by author.

17. Chalmers, 31-32.

18. "The wrong choice, the wrong time," Guardian (U.K.), 12 March 1982, sec. A, p. 14.

19. John Silkin (Member for Deptford), Statement in the House of Commons, 11 March 1982, Parliamentary Debates (Commons), col. 977.

20. Chalmers, 67.

21. Cook, 4.

22. Rt. Hon. Dr. John Gilbert, Bernard Conlan, and Bruce George, Strategic Nuclear Weapons Policy (draft report proposed by the authors but rejected as the Committee report), House of Commons Defence Committee, Fourth Report from the Defence Committee (Session 1980-1981) Strategic Nuclear Weapons Policy (London: HMSO, 1981), par. 33, p. xliv.

23. Chalmers, 26.

24. Sir Hugh Fraser (Member for Stafford and Stone), Statement in the House of Commons, 11 March 1982, Parliamentary Debates (Commons), col. 980.

25. DOGL 87/01, par. 2.

26. Statement, vol. 1, par. 222.

27. The warhead numbers are accurate. Adding up the ICBM, SLBM, and long-range bomber warhead totals for 1970 gives the Soviet Union 2,000 strategic warheads. Britain's 192 Polaris warheads represented 9.6% of the Soviet arsenal. Trident's 512 warheads represent 4.4% of the current Soviet strategic arsenal of 11,694 warheads (SALT rules). If a START agreement cuts the number of Soviet warheads to 6,000, then Trident would represent 8.5% of the Soviet arsenal. The real percentage would be lower since the START counting rules underestimate actual warhead totals. The 1970 information comes from: ISS, The Military Balance 1970-1971 (London: The Institute for Strategic Studies, 1970), 89. The current information comes from: IISS, Military Balance 1988-1989, 230-232.

28. DOGD 80/23, par. 51.

29. Ibid., par. 52.

30. Defence Committee, 1981, par. 8, pp. vii-viii.

31. DOGD 82/1, par. 31.

32. Ibid., par. 30.

33. Ibid., par. 31.

34. "Trident's Fourth Dimension," Times (U.K.), 8 March 1982, sec. A, p. 9.

35. Chichester and Wilkinson, 19.

36. Ibid., 25.

37. Lawrence Freedman, Note submitted to the Defence Committee, House of Commons Defence Committee, First Special Report from the Defence Committee (Session 1981-1982) Strategic Nuclear Weapons Policy (London: HMSO, 1982), par. 20, p. 29.

38. Statement, vol. 2, Cmnd. 344-II, tables 2.3, 3.1.

39. Ibid., table 2.3.

40. Chichester and Wilkinson, 22.

41. Freedman, Note to Defence Committee, par. 22, p. 30.

42. Grove, 399.

43. Chichester and Wilkinson, 22.

44. DOGD 82/1, 8-9.

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1. Hobbs, 61.

2. Ibid., 25-26.

3. DOGD 80/23, par. 25.

4. Hobbs, 26.

5. DOGD 80/23, par. 27.

6. Defence Committee, 1981, pp. v-xxii, especially par. 7, p. vii, par. 11, pp. viii-ix.

7. DOGD 80/23, par. 47.

8. Ibid., par. 47.

9. Freedman, Note to Defence Committee, par. 26, p. 31.

10. DOGD 80/23, par. 46.

11. Gilbert, Conlan, and George, par. 30, p. xlii.

12. DOGD 80/23, par. 45-46.

13. Hobbs, 43.

14. DOGD 80/23, par. 45.

15. Gilbert, Conlan, and George, par. 30, p. xliii.

16. Ibid., par. 29, p. xliii; DOGD 80/23, par. 47.

17. DOGD 80/23, par. 46.

18. Gilbert, Conlan, and George, par. 30, p. xliii.

19. DOGD 82/1, par. 3.

20. Ibid., par. 31.

21. Ibid., par. 27.

22. Hobbs, 37.

23. DOGD 80/23, par. 51.

24. DOGD 82/1, pars. 17-18.

25. Ibid., pars. 21-22, 24-25.

26. Ibid., par. 37.

27. Ibid., par. 27.

28. Defence Committee, 1988, par. 104-105, p. xxx.

29. DOGD 82/1, par. 25.

30. DOGD 80/23, par. 48.

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32. Colonel Jonathan Alford, testimony given to House of Commons Defence Committee, 9 July 1980, Defence Committee, 1981, 27.

33. DOGD 87/01, par. 21.

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35. Defence Committee, 1981, par. 13, p. ix.

36. Hobbs, 42.

37. Ibid.

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39. Alford, 27.

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42. Peter Adams, "France, Britain Mull Joint Sub Patrols to Fill Void Left by INF," Defense News, 24 October 1988, 1.

43. Grove, 349.

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69. DOGD 87/01, par. 8.

70. Defence Information Groups, 8.

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